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The National Program in the Use of Television in the Public Schools was an effort to determine the feasibility of using televised instruction as a major resource in the teaching of large classes. It was also concerned with: the kind and amount of other services needed to set up optimum conditions for learning; scheduling and school building problems involved; the budgetary implications of savings in time, space, and other costs; the best ways to develop teacher talent for television and for large class situations, and how to develop the best possible televised programs.

Nearly 40,000 students in more than 200 elementary, junior high, and high schools, received part of their daily instruction over television in large classes during the first year of the experiment. Procedures and results are described, but the emphasis of the report is on the second year, during which all of the participating schools except one continued in the program and most of them expanded their participation. New subjects were added to the list of televised courses in many school systems. The original courses were revised in light of experiences of the first year. Course content was changed to capitalize on the strengths of visual presentation. Since it was demonstrated that there was no single ideal pattern, several school systems tried variations in length and frequency of the telecasts in the second year.

Test results showed for the second consecutive year that students who received part of their instruction over television in large classes usually did as well as, and in many cases significantly better than, students taught by conventional methods in small classes. Out of 141 different comparisons, in which the performance of 43,105 television students was matched against that of 26,092 control students of equal ability, 97 comparisons favored the television students and 44 favored the control students. Many other advantages of televised instruction were supported by the evidence.

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THE NATIONAL PROGRAM IN THE USE OF TELEVISION IN THE PUBLIC SCHOOLS

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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A REPORT ON THE SECOND YEAR
1958-59

The Ford Foundation
and
The Fund for the Advancement of Education

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New York 22, New York

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THE NATIONAL PROGRAM IN THE USE OF TELEVISION IN THE PUBLIC SCHOOLS

During the past ten years, enrollment in the nation's public schools has increased by ten million students -- from 25,241,000 in 1950 to an estimated 35,286,000 this year. This unprecedented increase, brought about by an equally unprecedented rise in the number of births since the end of World War II, has confronted the schools with the task of providing classrooms and teachers for an average of a million new boys and girls each year.

Although the schools have made an heroic effort to meet this challenge, they have not been entirely successful. The number of new college graduates entering teaching has not kept pace with the number of experienced teachers leaving the profession, and the rate of new classroom construction has fallen behind the need. The United States Office of Education estimates that the schools are short 135,000 qualified teachers and 132,000 classrooms as of this academic year. It also estimates that nearly 100,000 of the nation's public school teachers have not met full certification standards for teaching, and that the public schools contain 1,850,000 boys and girls in excess of normal classroom capacity.

The National Program in the Use of Television in the Public Schools represents a nation-wide attack on the problems of quantity and quality. It is an effort to determine whether television, when used as a powerful resource in the teaching of very large classes during part of the school day, can bring about substantial savings in classroom space and teaching positions while at the same time improving the quality of education.

The National Program began in 1957-58. This is a report on its second year, 1958-59.

Origin of the Program

The National Program grew out of discussions between representatives of the Fund for the Advancement of Education and superintendents, principals, teachers, and school board members in several large cities throughout the country who were concerned that the continuing shortage of teachers and classrooms might bring about a serious deterioration in the quality of education. Participating in the first year were the public school systems of Atlanta, Cincinnati, Dade County (Miami), Detroit, Jefferson County, Kentucky, Milwaukee, Norfolk, Oklahoma City, Philadelphia, and Wichita, as well as scores of other school systems in Nebraska, North Carolina, and Oklahoma. Nearly 40,000 students in more than 200 schools received a portion of their daily instruction over television in large classes during the first year of the experiment.

The participating schools, taken together, constituted a fairly representative cross-section of American public schools. They included elementary schools, junior high schools, and senior high schools. In size they ranged all the way from a two-teacher high school in Nebraska enrolling only twenty-nine students to big city schools in Detroit and Philadelphia having a teaching staff of several hundred and enrolling several thousand students. Their students came from a wide variety of economic, cultural, and racial backgrounds, and spanned a wide range of ability and interests. Their teachers were of varying levels of competency. Some were new and modern suburban schools, others were aging, dilapidated urban schools with the most rudimentary facilities. All, however, had one thing in common: they had not been designed for the use of television as a medium of instruction in large classes.

Objectives

The major objective of the National Program is, as has been suggested earlier, to determine whether it is feasible, using televised instruction as a major resource, to teach very large classes of students with fewer teachers and fewer classrooms than would be required for conventional methods of instruction, and at the same time to upgrade the quality of education. It is hoped that the experiment will also shed light on several related questions:

1. The kind and amount of services other than televised instruction needed to set up optimum conditions for learning.

2. The scheduling and school building problems involved in teaching large classes by television, and whether or not these problems can be met economically and without sacrificing educational quality.

3. The budgetary implications -- both capital and operating -- of the savings in teacher time, classroom space, and other items of educational cost.

4. How best to develop teacher talent, not only for television, but also for teaching in large-classroom situations.

5. How to develop the best possible programs of televised instruction.

The National Program also has another aspect and objective -- to determine whether it is educationally sound and economically feasible to use television as a means of bringing instruction in subjects such as algebra, geometry, physics, chemistry, and foreign languages to students in small rural schools who otherwise might not be able to take courses in these subjects because of a lack of qualified teachers. The Oklahoma State and Nebraska experiments are seeking answers to this question.

The First Year

The first year of the National Program was one of exploration, of trial and error, of encountering problems and seeking solutions to them.

One of the biggest problems confronting the school systems participating in the program was that television, as a medium for presenting direct and systematic instruction, was largely beyond their previous experience. (One possible exception was Philadelphia, where in-school telecasts had been used in some schools since 1947, for enrichment and supplementary teaching.)

When the National Program was launched, not much was known about the potential of television as a medium of direct classroom instruction.

A few scattered experiments were then under way, notably those in Pittsburgh, St. Louis, and Hagerstown, but most of these involved the use of television in conventional-sized classrooms. Using television as a resource for the teaching of classes several times the size of regular classes was a technique relatively unknown in American education.

The newness of the medium posed all sorts of questions. To begin with, what were the qualities that made a good television teacher? Were these qualities different from those that characterized a good classroom teacher? If televised instruction was to be used in conjunction with regular classroom instruction, what was the role of the studio teacher and what was the role of the classroom teacher? Within the limits of a given class period, how much time should the studio teacher have, and how much time should the classroom teacher have? What should each attempt to do in the alloted time? Would this new medium of instruction glamorize the television teacher and relegate the classroom teacher to the role of a monitor? Or was it possible for the studio teacher and the classroom teacher to combine their competencies into a team approach which might be more effective than the conventional method of teaching? Was it possible, by the use of this new medium, to bring into the classroom educational experiences which the student might not otherwise be able to have? How could courses be organized so as to take advantage of the full potential of this new medium of instruction?

These were some of the questions which confronted the teachers, supervisors, curriculum specialists, principals, and superintendents of the participating schools as they began their experiments in the Fall of 1957. Final answers to many of these questions have not yet been found, but considerable progress was made during the course of the first year in seeking to find answers.

In the summer of 1957, before the National Program got under way, workshops were held in the participating school systems to plan in detail the courses which were to be televised. Participating in these workshops were the studio teachers, classroom teachers, and curriculum specialists who were to be involved in the experiment. (Exceptions in this case were the Nebraska and Oklahoma State experiments, where it was not feasible to bring together all the teachers in the rural schools which were scheduled to receive the telecasts.) In most cases, these workshops developed detailed course outlines, as well as guides for the classroom teachers and, in several instances, guides for the students as well. These workshops proved to be of inestimable value, because in most instances they resulted in courses that were far more carefully planned than had been true of the same courses in previous years. As a general rule, outside consultants were brought in to offer expert advice on such matters as curriculum planning and techniques of television teaching. (Such workshops were held again in the summer of 1958, before the start of the second year of the National Program.)

Since today's schools were not designed for television teaching -- especially in large classes -- one of the major problems confronting the schools participating in the National Program was how to make provision for classes that were five, ten, or even twenty times the size of conventional classes. This problem was met in various ways. One of the most obvious solutions was to use the school auditorium, ordinarily vacant during most of the school day. This approach was the one most commonly used. Some schools were fortunate enough to have fairly modern auditoriums, which could be converted into television classrooms quite readily, but others had to make do with auditoriums where the acoustics were bad, where the television receiver sets had to be spaced at awkward intervals, and where the seating arrangements left much to be desired, especially when it was necessary for students in one class to make room for students in the next class within a matter of a few minutes. Lighting in the auditoriums was not much of a problem, since it is not necessary to dim the lights as much for television reception as it is for motion picture reception. One universal problem with auditoriums, however, was that the arm rests were not wide enough for the students to use in taking notes. Several makeshift arrangements were called into play. In some schools the students were equipped with lap-boards, and in others students used their ingenuity and came equipped with hard-cover notebooks.

Another obvious solution to the problem of finding space for large classes was to use the school cafeteria, which, like the auditorium, is usually vacant during most of the school day. This approach had its advantages and its disadvantages. On the plus side, the cafeteria tables offered the students a solid surface on which they could rest their notebooks. The tables also made it possible to arrange students into small groups, and in at least one school this advantage was seized upon to form forty discussion groups in a class of two hundred, thereby making possible the equivalent of small seminars in the classroom follow-up part of the lesson. The major disadvantages of cafeterias as large classrooms were that noises -- and odors -- were often distracting, and that the television receiving sets usually had to be ranged along the walls, which sometimes made for rather odd seating arrangements.

Other approaches to the space problem were tried. Some schools used large study halls, which proved generally satisfactory because they provided desks for the students and permitted a systematic arrangement of the television receiving sets. In other cases, less acceptable arrangements had to be employed. One elementary school, for example, put two portable buildings together to form its large television classroom. This was decidedly not a happy arrangement, but the classroom teacher responded heroically to the situation and that particular class was mentioned favorably by many people who visited various schools in the National Program during the first year.

The principal characteristic of all the experiments except the Nebraska and Oklahoma State projects was the large class. At the elementary level the television classes ranged in size up to 175. At the junior and senior high level they were much larger, ranging in size from 200 to 500. Most of the elementary schools in the National Program were re-organized along the lines of a plan suggested in Schools for Tomorrow. Under this plan, a student spent half the day in a class of twenty-five students or less, receiving instruction in reading, writing, and arithmetic from a single teacher; the other half of the day was spent in groups of 75 to 150, with a series of teachers, receiving instruction in social studies, science, physical education, health, safety, and other subjects. It was in these larger groups that elementary students in the National Program received part of their daily instruction over television.

At the junior and senior high school level, the large classes were generally in courses such as history, English, mathematics, physics, and chemistry.

Because of the wide variations in practice among the participating school systems, and because of other variations having to do with subject matter and grade level, it is not possible to give any generalized picture of how the television courses were taught. However, at the risk of over-simplification, the following picture might be drawn:

In the elementary courses, the classroom teacher usually had about five minutes before the telecast to prepare her students for what they were about to see and hear. She was able to do this by using the teacher guides which had been prepared in advance. The studio teacher then presented the main points of the lesson in a twenty-minute telecast, following which the classroom teacher then answered questions, cleared up any misunderstandings, stimulated discussion about the main points of the lesson, and -- depending upon such imponderables as the general ability level of her class or the complexity of the subject matter which had been presented in the telecast -- either reinforced the main points of the lesson or carried her students much beyond what had been presented. Sometimes, of course, a classroom teacher did both. The teacher guides which had been prepared in the summer workshops often contained suggestions for what the classroom teacher might do in the follow-up part of the lesson, and in those instances where student guides had also been prepared, there were suggestions as to what the student might do on his own to follow-up the main points of the lesson.

In the junior and senior high school courses, much the same procedure was followed, except that there was much wider variation in the timing of the classroom follow-up period. Practice varied so widely that few generalizations are possible, except to say that the televised portion of the lesson was usually about thirty minutes, and the follow-up portion about twenty or twenty-five minutes. Schedules varied so widely that in some instances the "follow-up" actually came before the telecast part of the lesson, in others it came afterward, and in still others it was divided.

As a general rule, there were one or more regular classroom teachers present in the viewing room during the entire lesson. In some instances, one classroom teacher handled the entire class with the assistance of an aide who took attendance, passed out papers, and performed other non-professional chores necessary to the orderly conduct of a classroom. This was most often true at the elementary level. At the junior and senior high school levels, the general practice depended a great deal on subject matter, scheduling, and the size of the class. In some cases one regular teacher in the particular subject matter of the course (for example, an English teacher) handled the entire class with the assistance of one or more aides. In other cases, two teachers in the particular subject matter were assigned to the large classroom. In still other cases -- as when, for example, a class in English was to be followed by a class in history in the same large room -- the teacher from each subject matter area was assigned to both classes. The English teacher, for example, would handle the follow-up activities in her course, assisted by the history teacher, and during the history course the roles of the two teachers would be reversed. Finally, it should be emphasized that no student in the National Program received all of his daily instruction by television. Even in the Nebraska and Oklahoma experiments, where often there was no classroom teacher present in the viewing room, the televised instruction received by each student represented only a small portion of the total amount of instruction he received in all his classes during the school day.

To assist the participating school systems in evaluating their experiences under the National Program, two committees of educators and testing experts were established during the first year. The first of these, known as the Appraisal Committee, was headed by Herold C. Hunt, Eliot Professor of Education at the Harvard Graduate School of Education, and was charged with the responsibility of appraising such things as the quality of instruction, techniques and procedures of teaching large classes, the physical arrangements of the large classes, scheduling problems, etc. The second committee, known as the Evaluation Committee, was headed by Arthur E. Traxler, Executive Director of the Educational Records Bureau, and was responsible for advising the participating school systems in the testing of student achievement. Members of both committees visited the various projects in the National Program, offering advice and counsel, and helping the project people with their problems. Arrangements also were made for project representatives to visit other projects during the course of the year, so that all could learn from the experience of others.

Three meetings of the project representatives were held during the first year -- a two-day conference at Philadelphia in July, at which evaluation procedures were worked out, a two-day meeting of superintendents and project directors at Pennsylvania State University in October, at which common problems were discussed, and another meeting in Philadelphia in February of 1959.

Despite all sorts of handicaps, and the newness of the medium, the first year's results were highly encouraging. The carefully designed testing program showed that on the whole the students in the large television classes learned as much as, and in many cases significantly more than, students of equal ability in conventional classes. Out of 110 separate comparisons, in which the achievement of students in the television classes was matched against that of students of equal ability in conventional classes, 68 comparisons were in favor of the television students and 42 in favor of the control students. In 38 cases, the difference in achievement was large enough to be statistically significant. Twenty-nine of these differences were in favor of the television students and only nine were in favor of the control students. (See table on page 14.)

Moreover, the participating schools discovered that by holding the large classes in cafeterias, auditoriums, and other rooms ordinarily used for only a small fraction of the school day, a substantial savings in classroom space resulted. For some of the schools this meant that they no longer had to operate on "double sessions," as they had been doing for several years. For others it meant a considerable savings in new classroom construction. The Dade County (Florida) school system, for example, has saved an estimated three million dollars in new construction. The schools also discovered that the large classes resulted in a more effective use of teacher time, so that during other parts of the school day it was possible to have much smaller classes and to give slow learners and rapid learners much more individualized instruction than had been possible under conventional methods. In some schools the teacher time saved in the large classes was used to give teachers a free period each day, during which they could plan lessons, correct papers, read, or just relax. In other schools it meant not having to hire as many new teachers as would have been needed for increased enrollments under conventional methods of instruction.

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Test Results, 1957-58

	N	Number of Comparisons in Favor of TV Classes	N	Number of Comparisons in Favor of Control Classes
Atlanta	2,367	10(6)	2,512	5 (2)
Cincinnati	672	5 (1)	672	3 (0)
Dade County, Florida	1,856	12 (5)	1,435	10 (2)
Detroit	1,897	10 (6)	1,738	4 (1)
Jefferson County, Ky.	1,104	3 (2)	1,584	1 (0)
Milwaukee	950	2 (1)	623	1 (0)
Nebraska	568	3 (0)	995	4 (1)
Norfolk	810	8 (5)	850	3 (2)
North Carolina	981	3 (2)	981	1 (0)
Oklahoma City	359	3 (0)	284	5 (1)
Philadelphia	2,391	9 (1)	2,391	5 (0)
Totals	14,326	68 (29)	12,666	42 (9)

Note: Numbers in parentheses indicate cases where the difference in achievement was statistically significant.

"N" signifies the number of TV and control students involved in the comparisons.

The Second Year

With the experience gained during the first year, the schools participating in the National Program began the second year with more confidence. They now had some guide lines to go by, some precedents to follow, and a year of experience which could be tapped in seeking answers to their problems. Moreover, they had some studio teachers who had spent many hours before the cameras, some producers who had experienced the ordeal of producing daily television lessons, day after day and week after week, and some classroom teachers who knew what it was like to teach a class of some 150 pupils using television as a major resource. They also had some principals who were willing to rearrange the schedules in their schools so as to include televised courses as an integral part of the curriculum, and some students who were beginning to accept televised lessons in large classes as a natural part of their school program. As a result, the second year went more smoothly than the first. There were fewer frustrations, answers to problems were easier to find, and a cooperative spirit had been developed between teachers, studio personnel, and school administrators. The report of the Detroit Public Schools for 1958-59 succinctly summed up the situation in these words: "The second year brought with it problems and disappointments, but they were fewer in number than those of the first year and they were frequently overshadowed by many highly satisfactory experiences. A year of experience had helped on-camera teachers to teach better lessons, producers to produce them more capably, and classroom teachers to use them more effectively. The team approach to television teaching was paying dividends in lessons well taught and effectively used."

Expansion: All of the participating school systems except one continued in the National Program during the second year, and most of them expanded their participation in terms of the number of schools and the number of students. The one exception was Cincinnati, which, without additional grant support, continued to use televised instruction as a major resource. (Wichita, which had been using donated time on a commercial station for its telecasts during the first year, was forced to improvise during the second year when the commercial station found it could no longer provide free time. Faced with a crisis, the Wichita school authorities displayed remarkable ingenuity. They rigged up a mobile television studio, housed in a trailer, and hauled it from school to school with a pick-up truck. At each stop, the "crew" -- made up of two studio teachers and a producer-director, who took turns driving the truck -- connected the school building with the studio by means of a specially designed plug, much as a housewife plugs in a toaster or a lamp to a wall socket in her home.)

Three new experiments were added to the National Program during the second year. In Kansas City, Missouri, three local television stations volunteered to donate a half-hour of broadcast time each school day. This made it possible for pilot classes in three Kansas City schools to receive daily instruction over television. The courses taught were 5th grade Science, Health and Safety, 9th grade Science, and 10th grade World History.

The second new experiment involved sixteen school systems in Southwestern Indiana which banded together to form the Southwestern Indiana Educational Television Council, with headquarters in Evansville. This project represented a unique venture by a cluster of adjacent school systems into cooperative planning, financing, and operations. The participating school systems put money into a common treasury, on a per-pupil basis, to finance the Council's share of the total costs of the experiment. More than 10,000 students in the 16 school systems received televised instruction in 5th and 6th grade Science, 7th and 8th grade General Science, 9th grade English Literature and Grammar, 10th grade Geometry, 11th grade United States History, and 12th grade Government, Economics, and Sociology.

The third new experiment in the National Program involved another new departure in American education. Known as the "Kentuckiana" project, this involved a cluster of six high schools in northern Kentucky and southern Indiana, with the television signal originating in the Jefferson County studios at Louisville. Some 7,000 students in these six schools received televised instruction in 9th grade General Science, 10th grade English, and 11th grade American History.

Other Changes: Several of the participating school systems added new subjects to their list of televised courses during the second year. Atlanta, for example, added courses in 5th grade Social Science and 9th grade General Physical Science. Dade County in Florida added elementary courses in

Spanish, Science, Art, Literature, and Music, plus new courses in 10th grade Biology and English, and 11th grade Driver Education. Detroit added a course in 4th grade Conversational Spanish for students who had taken a previous course in the subject the year before. Nebraska added a course in high school Chemistry, consisting of 160 half-hour filmed lessons taught by Professor John Baxter of the University of Florida. Oklahoma also added the Baxter Chemistry course to its list, as well as new courses in 6th grade Arithmetic, 7th grade Natural Science, 9th grade Oklahoma History, 9th and 10th grade Biology, 11th grade American History, and 11th and 12th grade Mathematical Analysis. Norfolk added elementary courses in Art, Literature, and Music, as well as a 9th grade course in Science. Philadelphia added a course in 6th grade Language Arts, and a course in 10th grade Mathematics. (See page 19 for a list of the courses taught over television in 1958-59.)

In addition to adding new courses, several of the participating school systems made a number of changes in the courses taught by television. Each of the original courses was revised in the light of the experience of the first year. Course content was changed somewhat to capitalize on the strengths of visual presentation by means of television. Some new material was added, some original material was deleted. Some units were expanded, others were shortened.

Since the experience of the first year had demonstrated that there is no single ideal pattern, in every subject matter area and at every grade level, with respect to the length and frequency of the telecasts, several

THE NATIONAL PROGRAM IN THE USE OF TELEVISION IN THE PUBLIC SCHOOLS

Subjects Taught, 1958-59

School System	Grade	Subject
ATLANTA	3rd	Science
	5th	Social Science
	6th	Science
	7th	Social Studies
	8th	Health Science
	9th	General Physical Science
	11th	American History
	11-12th	Physics
DADE COUNTY, FLA.	3, 4	Dade County History
	3-6	Spanish; Science; Art; Literature; Music
	5, 6	Old World History
	7th	Science
	8th	United States History
	9th	Civics
	10th	Biology; English
	11th	American History; Driver Education
DETROIT	3rd	Conversational Spanish
	4th	Conversational Spanish
	5th	Health; Science
	8th	Science
	9th	World History
	11th	American Literature
JEFFERSON COUNTY	3-6	Science; Social Science; Conversational Spanish
KENTUCKLANA	9th	General Science
	10th	English
	11th	American History

Subjects Taught, 1958-59 -- continued:

School System	Grade	Subject
KANSAS CITY, MO.	5th	Health, Science & Safety
	9th	General Science
	10th	World History
MILWAUKEE	5, 6	Science, Health & Safety
	9th	General Science I and II
	10th	Biology I and II
	11th	United States History I and II
NEBRASKA	9th	General Mathematics
	9, 10	Beginning Algebra
	9-12	Art I; Spanish
	10, 11	Geometry
	10-12	Art III
	11, 12	English; Physics; Chemistry; Advanced Algebra
NORFOLK	5, 6	Elementary Science; "The Arts" (Art, Literature and Music); Spanish
	8th	American History
	9th	Science
	10th	Plane Geometry
NORTH CAROLINA	8th	Arithmetic
	9th	Physical Science
	10th	World History
	11th	United States History
OKLAHOMA CITY	3, 4	Music; Art
	4th	Social Studies
	5, 6	Science
	6th	Arithmetic
	7th	Natural Science
	8, 9	Algebra I
	9th	Oklahoma History
	9, 10	Biology
	11th	American History
	11, 12	Algebra II; Chemistry; Math. Analysis; Physics

Subjects Taught, 1958-59 -- continued:

School System	Grade	Subject
OKLAHOMA STATE	9, 10	Algebra I
	10-12	Algebra II
	11, 12	Physics; Chemistry
PHILADELPHIA	5th	Social Studies
	5, 6	Science
	6th	Language Arts
	7th	Mathematics
	8th	Science
	10th	Mathematics; Biology
SOUTHWESTERN INDIANA	5, 6	Intermediate Science
	7, 8	Upper Science and Health
	9th	Literature - Grammar
	10th	Plane Geometry
	11th	United States History
	12th	Government Socio-Economics
WICHITA	5, 6	Social Studies

school systems tried variations in the second year. Atlanta, for example, reduced the number of telecasts per week from five to four in junior and senior high schools. The fifth day was used for testing, group work, and individual activities growing out of the televised lessons. In Detroit, the telecast time for the 3rd grade course in Conversational Spanish was reduced from thirty minutes to twenty minutes per day. This was done because the first year's experience indicated that a thirty-minute period seemed too long for the younger children. In the senior and junior high schools of Milwaukee, students met in large classes three days each week, instead of five, for direct television instruction and class participation. In addition, the students met the other two days of the week in classes numbering approximately 30 students. In Philadelphia, where class periods in the junior and senior high schools are of only 45-minute duration, it was felt that a daily twenty-five minute telecast did not leave enough time for classroom follow-up activities. Consequently the number of telecasts in each course was reduced to three per week. The other two periods were spent in traditional-type classes with one, two, or three teachers who had served in the large classes.

Patterns of Finance: When the National Program began, it was agreed that grant support by the Fund for the Advancement of Education would be largely on an equal matching basis during the first year, and then would taper off so that the participating schools would assume an increasingly greater share of the costs of the program. Thus, during the second year, when the Ford Foundation assumed grant support of the Program, the grants to participating school systems which had been in the Program the year before were reduced. Grants to the school systems entering the Program for the first time were largely on an equal matching basis.

Several new patterns of finance among the participating school systems emerged during the second year. For example, the State Legislature in North Carolina showed its interest in the experiment by appropriating $25,000 for 1959-60 and $50,000 for 1960-61 to pay part of the cost of continuing the experiment for an additional two years. In the Southwestern Indiana and Kentuckiana experiments, which were cooperatively financed by clusters of neighboring school systems, the local cost was pro-rated among the participating schools on a per-capita basis of students receiving televised instruction in each school.

Evaluation: As was the case during the first year, the main focus of the evaluation effort in the second year was on comparing the performance of the students in the large television classes with the performance of students of equal ability who received their instruction in conventional classes. During the second year, several of the participating school systems also sent questionnaires to principals, teachers, students, and parents, to determine their attitudes toward the experiment. In general, the responses to these questionnaires were favorable. Details may be found in the individual project summaries, which begin on page .

There was a wide variation among the participating school systems in the kind and quality of the tests used and in the statistical treatment of the test results. Some schools matched experimental and control group pupil for pupil, others matched on the basis of means and standard deviations of experimental and control groups, and still others took differences between the groups into account through analysis of covariance, a statistical procedure favored by the Evaluation Committee because of its precision.

Although actual testing and statistical procedures varied widely, results presented below are based only on comparisons in which the television and control students had been equated on the basis of scholastic aptitude and pre-test scores, or in which differences between television and control groups had been taken into account in such a way that legitimate comparisons could be made. In cases where the control students were drawn from different schools than the television students, the only comparisons considered in the results were those where the schools were comparable. In Nebraska, for example, the television students in the small rural high schools were matched against students in other small schools and also against students in large city high schools. The latter comparisons were not included in the results reported below because of the substantial difference between the two types of schools. Because of the difficulty of finding comparable control groups in the Oklahoma State project, no comparisons from that experiment are included. In cases where there was a statistically significant difference between the scores of the television and control students on the pre-tests, such comparisons were not considered valid unless the difference had been taken into account by analysis of covariance. Finally, the comparisons made in the Wichita experiment have not been included in the results reported below, because the televised instruction there was limited to about 75 minutes a week. Thus, the same procedure used in reporting the results of the first year's testing program was used again for the second year. Every effort was made to insure comparability in the comparisons.

Test Results: Although the evaluators agree that no final conclusions can or should be drawn until the experiment is over, the test results clearly showed, for the second consecutive year, that students who received part of their instruction over television in large classes usually did as well as, and in many cases significantly better than, students who were taught by conventional methods in small classes.

Out of 141 different comparisons, in which the performance of 43,105 television students was matched against that of 26,092 control students of equal ability, 97 comparisons favored the TV students and 44 favored the control students. There were 52 cases where the difference in achievement was large enough to be statistically significant; in 40 of these the difference was in favor of the TV classes, and in only 12 was it in favor of the control classes. According to the laws of probability, the chances of such a result happening purely by accident are only 5 in a thousand.

The table on page 26 and the chart on page 27 summarize the results of the comparisons for 1958-59. (For the first year's test results, see the table on page 14 .)

THE NATIONAL PROGRAM IN THE USE OF TELEVISION IN THE PUBLIC SCHOOLS

Test Results, 1958-59

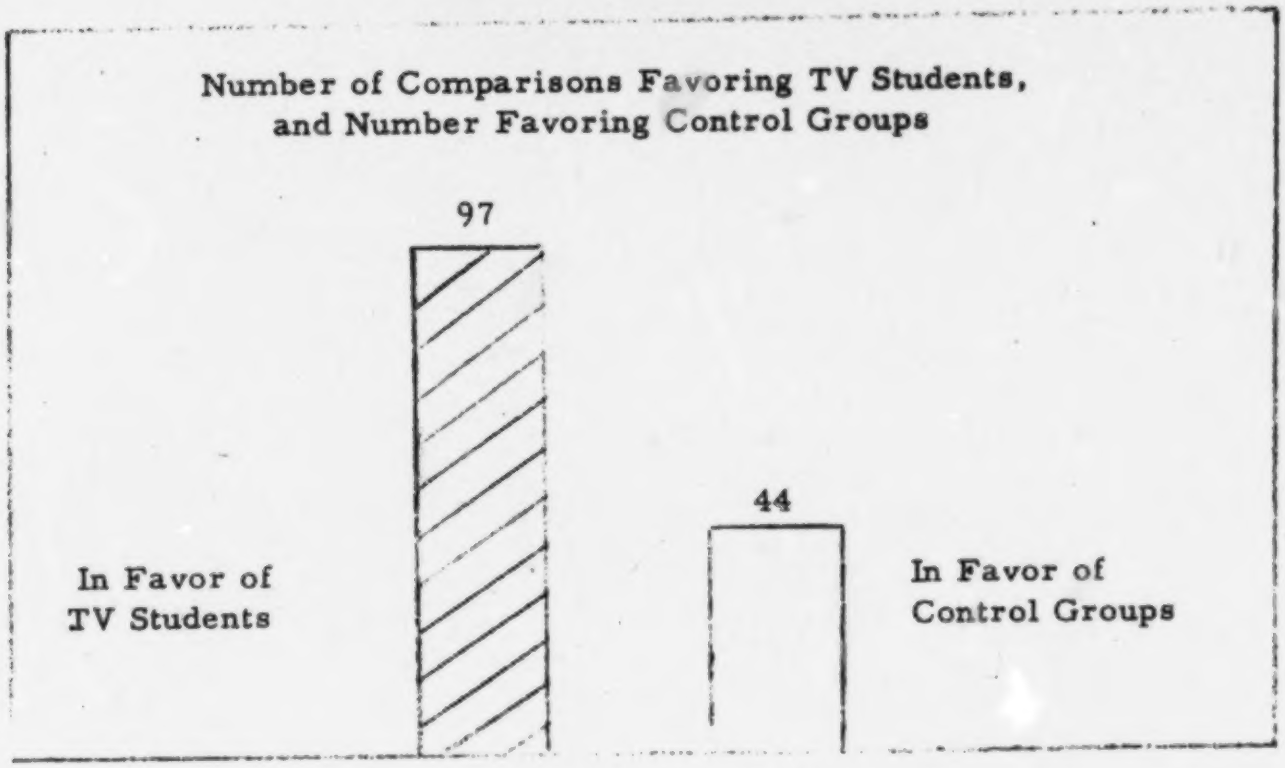
	N	Number of Comparisons in Favor of TV Classes	N	Number of Comparisons in Favor of Control Classes
Atlanta	5,828	18 (11)	3,307	12 (4)
Dade County, Fla.	710	13 (3)	530	6 (0)
Detroit	2,442	9 (3)	1,722	5 (2)
Jefferson County	3,906	5 (3)	3,834	4 (2)
Kentuckiana	6,455	2 (1)	1,725	2 (0)
Kansas City, Mo.	793	7 (5)	513	0
Milwaukee	1,301	4 (3)	932	0
Nebraska	261	3 (2)	444	6 (2)
Norfolk	617	6 (2)	576	3 (1)
North Carolina	8,000	3 (2)	4,595	0
Oklahoma City	391	6 (1)	296	1 (1)
Philadelphia	5,262	8 (4)	5,262	2 (0)
Southwestern Indiana	7,139	13 (0)	2,356	3 (0)
Totals	43,105	97 (40)	26,092	44 (12)

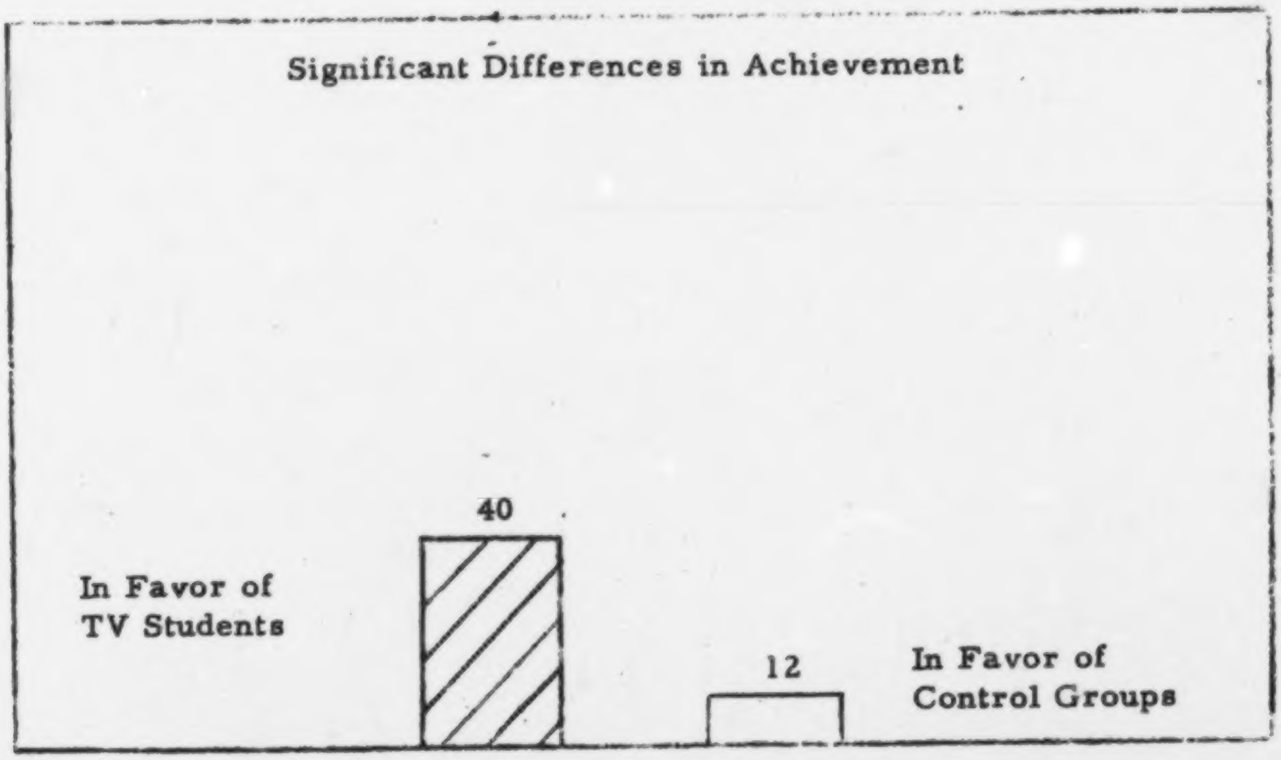
Note: Numbers in parentheses indicate the number of cases where the difference in achievement was statistically significant.

"N" signifies the number of TV and control students involved in the comparisons.

THE NATIONAL PROGRAM IN THE USE OF TELEVISION IN THE PUBLIC SCHOOLS

Test Results, 1958-59





The most interesting aspect of the test outcomes during the second year is that in many individual cases they follow the same pattern as the outcomes of the first year. In both years, there were many courses -- taught by the same teachers -- where the results were statistically significant.

Other Results: While it is still too early to make any final judgments about the National Program, the following conclusions about the first two years seem fairly well supported by objective and subjective evidence:

1. Television lessons are more carefully planned than conventional lessons. This is true for three reasons: First, the courses to be taught by television are carefully planned during the preceeding summer by studio teachers, classroom teachers, and curriculum specialists, working as a team. The participating school systems report that conventional courses do not ordinarily have the benefit of such intensive planning. Secondly, the studio teacher meets only one class a day, generally for twenty or thirty minutes, and has the rest of the day to prepare for tomorrow's lesson. Third, during the course of the year, the classroom teachers meet regularly with the studio teachers to evaluate what has gone before, and in this light to plan what is to follow. Thus, the entire content of a course is under continuous scrutiny.

2. Because of the careful planning, the television teacher can cover more ground than a teacher in a conventional classroom situation.

3. Television can bring to students educational experiences far beyond the potential of the conventional classroom.

4. Outstanding resource people can be seen and heard by many more students over television than is possible in a conventional teaching situation, and through television students can visit many places of interest and significance that they otherwise would not be able to visit.

5. With rare exceptions, discipline has not been a problem in the large classes.

6. Students are learning at an early stage of their educational career the art of taking notes and the ability to concentrate.

7. In many instances students in the television classes have been stimulated to make greater use of the school library than students in the conventional classes. (This came as a surprise to many teachers who originally had feared that televised instruction would dampen a student's interest in reading.)

8. Since teachers learn much by observing other teachers in action, televised teaching has proved to be a valuable means for in-service training, particularly in the case of beginning teachers.

9. Television, as a medium of instruction, is strictly neutral. It can transmit mediocre teaching as well as superior teaching. To put the matter another way, the quality of the output depends on the quality of the input. Television, therefore, is a very exacting medium. It demands the very best in teaching skill.

10. There must be close rapport between the studio teacher and the classroom teacher. If they work together as a team, they can do a much

more effective job of teaching than either of them could do alone. If they do not work together, a poor lesson will result.

11. Good classroom teaching, as well as good studio teaching, is a necessity in large classes. This means that the classroom teacher, far from being relegated to a minor role, has assumed new importance -- particularly in the large classes. This point was stressed in the report of one of the participating school systems as follows: "The classroom teacher can either make or break the lesson, assuming that the lesson is educationally sound."

12. The use of television for direct instruction should be introduced early in the elementary grades, so students will become accustomed to it early in their school careers.

13. Generally speaking, auditoriums, cafeterias, gymnasiums, and all-purpose rooms are not ideal for classroom use in television teaching. Some of the newer buildings are providing for the needs of the large classes, and in several of the participating schools alterations have significantly improved existing gymnasiums, auditoriums, and cafeterias, for classroom use.

14. Large numbers of adults are tuning in on the televised lessons. This has helped to promote a greater interest in education on the part of many parents.

15. The full potential of television for making subjects like history "come alive" for students has not yet been adequately explored. Television makes possible a new kind of teaching, and much more needs to be learned about its potential.

16. Much more experimenting needs to be done with respect to the problem of developing the telecast part of the lesson and the classroom follow-up into a unified, meaningful whole.

17. Students have had to accept more responsibility for their own learning and have learned to do so.

18. At the outset of the experiment, some teachers were concerned about the fact that students would not be able to ask questions during the telecasts. It soon became apparent, however, that this was not a major problem. Because of the advanced planning and careful preparation, studio teachers were able to anticipate many student questions. Moreover, many students liked the idea of having the teacher present the lesson without interruptions. Finally, classroom teachers learned to handle student questions in the follow-up part of the lessons.

The Chapel Hill Workshop: During the last two weeks of June in 1959, after the National Program had completed its second year, more than 150 teachers representing the 200 school systems participating in the Program assembled at the University of North Carolina at Chapel Hill in what was no doubt one of the most unusual educational conferences ever held in America. It was the first nation-wide workshop on the use of television in the teaching of large classes as a part of the regular instructional program of public schools.

The fifteen states represented at the workshop stretched from California on the west to Michigan on the north to Pennsylvania on the east, and to Florida on the south. Participating in the workshop were teachers from rural schools, suburban schools, and large city schools. In addition to the teachers, many principals, studio directors and producers, station managers, local project directors, supervisors, curriculum specialists, and even a few superintendents also attended part or all of the sessions. About a dozen resource people -- including deans of schools of education, architects, consultants, and discussion leaders -- also participated. But essentially, it was a conference of, by, and for those who were directly involved as teachers in presenting and using televised instruction as a resource in large classes.

The primary purpose of the workshop was to take a serious look at the progress of the National Program to date, to give the participating teachers an opportunity to exchange ideas and information, discuss mutual problems, and to plan for the future.

Following are some of the questions discussed at the workshop:

1. What is the present state of the art of television teaching?
2. What findings have emerged from the National Program thus far?
3. What constitutes a high-quality telecast? Are there identifiable criteria and objectives that can be applied to evaluate the quality of telecasts? If so, what are they?
4. What should the classroom teacher be doing during the telecast?
5. What characteristics and training should studio teachers have?
6. What assistance should be provided for studio teachers?

7. What should be the relationship of the studio teacher to the program director, producer, and other studio personnel?

8. What should be the relationship of the studio teacher to the classroom teacher, curriculum specialists, and others in determining course content?

9. How long should the telecast part of the lesson be, how frequently should the telecasts be presented, and how best can they be fitted into the time normally alloted for class period?

10. What should be the work load of the studio teacher?

11. What is the function of the classroom follow-up, and what is its relationship to the telecast part of the lesson?

12. What teaching and learning techniques in large classes are different from those in small classes?

13. Are there other special problems encountered in large classes, and if so, what can be done about them?

14. How can remedial work best be done?

15. What about homework?

16. How many teachers are needed in a large class? How about the use of aides and secretaries?

17. How large should the class be?

18. What should be the teaching load of the classroom teacher in the large class?

19. What characteristics should a large class teacher have? Are they different from those of a regular teacher?

20. What is the potential relationship of television as a medium of instruction to the curriculum and how may it affect changes therein?

21. What are the relative advantages and disadvantages of open-circuit and closed-circuit systems of televised instruction?

22. What type of studio facilities are needed for teaching by television?

23. What facilities in receiving schools are necessary for exploiting the full potential of television as a medium of instruction in large classes?

24. How should teachers be prepared for the most effective use of televised instruction in large classes? What should be the role of teachers colleges and what should be the role of school systems in preparing studio teachers and large-class teachers?

25. Is it likely that television teaching will change the role of the teacher? If so, how?

There is not room here to report on the discussion of these questions, but multilithed copies of a report on the Chapel Hill workshop can be obtained without charge by writing to the Fund for the Advancement of Education, 477 Madison Avenue, New York 22, New York.

The Third Year

As this is written, the National Program in the Use of Television in the Public Schools is approaching the end of its third year. During the third year, the Program was further expanded to include 38 additional school systems. These included Anaheim, California; ten communities in central Michigan; Des Moines, Iowa; seven county school systems on the west coast of Florida in the Tampa region; and 19 school systems in central Ohio, in the vicinity of Columbus.

The following table summarizes the growth of the National Program during its first three years.

SUMMARY STATISTICS

	1957-58	1958-59	1959-60
Number of Schools	223	399	775
Number of School Systems	103	157	254
Number of TV Students	39,167	92,571	178,304

Since the use of television as a resource in the teaching of large classes is a relatively new technique in American education, one of the major problems confronting the school systems participating in the National Program has been the training of studio teachers and large-class teachers for their special tasks. During 1959-60, two special projects were undertaken in Florida as a part of the National Program to explore ways of meeting this problem. The first involved a cooperative arrangement between the Dade County school system and the University of Miami, aimed at improving the quality of televised instruction in the Dade County schools. In this project, faculty members from the University were assigned to view the telecasts, note strengths and weaknesses, and prepare written critiques for the television teachers with comments and suggestions for improvement. The University faculty members viewed the telecasts daily in teams of two -- one member from the School of Education, the other from the appropriate subject matter field. In addition, the University released two of its faculty members on a full-time basis to work directly with the television teachers in improving the telecasts and also to serve as liason between the University viewers and the television teachers.

The second project involved a three-way arrangement between Florida State University, the Dade County schools, and the West Florida schools, under which the University undertook to provide instruction and on-the-job training -- with full college credits -- for (1) teachers already teaching in large class situations, (2) regular classroom teachers who desired to become large class teachers, and (3) persons who hold an undergraduate degree who are not now teachers but who desire to become large class teachers. To teach this new course, Florida State University added to its faculty two experienced large class teachers from the Dade County public schools, and one from the Florida West Coast area. Seventy-five teachers from the Dade County public schools enrolled in the course and sixty-nine from the Florida West Coast schools.

Reports from the Dade County and West Florida schools indicate that the quality of the telecasts and the large-class follow-up improved substantially as a result of the help the studio teachers and large class teachers received during the course of the year.

SUMMARIES OF REPORTS

On the following pages are summaries of the reports submitted to the Foundation by the school systems participating in the National Program in the Use of Television in the Public Schools during the second year. They have the weaknesses of all summaries, in that they do not give a complete picture of the local projects, but they do give some indication of how the National Program operated in individual school systems.

ATLANTA

Description: Thirty-two elementary schools and nine high schools participated in the program in 1958-59, with a total of 135 classes.

Since the main point of the experiment was and is to determine how well one teacher using television can teach a significantly larger number of students in comparison with a teacher of the traditional number of thirty, the experiment started out with the simplest structure imaginable. Two or more classes were put together on television days under a single teacher. This freed some teachers for use elsewhere. Although a school saved no money by doing without teachers, a saving in services rendered was effected. Three forty-five minute periods per week per extra class was the usual saving.

The usual elementary school organization involved a forty-five minute period scheduled each day for the entire class with a televised program on alternate days. Non-television days were used in class activities and individual research growing out of the television lessons. High schools had a period length of fifty-six minutes with four televised lessons of thirty minutes each per week. The fifth day was used for testing, group and individual activities.

Most classes were held in auditoriums, with many and varied arrangements. Almost no discipline problem resulted from the large class.

Smaller classes (60-80) were housed in libraries, cafeterias, or large classrooms. A few occupied conventional classrooms, two students to each fixed desk, without undue complaint.

The classroom teachers met weekly with the studio teachers to evaluate what had gone before and, in this light, to plan what was to follow. The entire content of a course was thus under continuous scrutiny, as was the content of each lesson and the methods by which the content was presented. This continuous scrutiny overflowed into the classroom in the form of study sheets for the pupils, suggested activities of preparation and follow-up to be carried out by the classroom teacher, and evaluation reports by the classroom teacher on what that teacher had done and found worthy. Thus, wach classroom teacher had the continuous benefit of the experiences of many teachers involved in the same area of teaching. From this, much good resulted.

Findings: In Grade 3 in elementary science all four comparisons of gains - for white boys, white girls, Negro boys, and Negro girls - favored TV instruction. The differences were substantial and all but one were statistically significant.

In Grade 5, the course in social studies was a new offering. Three of the four comparisons favored TV instruction, although none was statistically significant. There was further confirmatory evidence that the children enjoyed this learning experience.

In Grade 6, the course in science was also a new offering. In this instance, three of the four comparisons favored conventional instruction although none was statistically significant. The within-course testing and evidence of student interest also were consistent with the judgment that this instruction was pitched somewhat too high for many and was presented perhaps a bit too formally for sixth graders. It will be interesting to check the results for this course in 1959-60.

In Grade 7, social studies, the comparisons for white pupils favored conventional instruction, while those for Negro pupils favored TV instruction. The only measures of interest were derived from a special study of the Stoddard Plan schools, which involved only Negro pupils. These showed high interest, consistent with achievement.

In Grade 8 Health Science was offered for the second time. This has been difficult to schedule because of the varied scheduling patterns employed by the schools for this subject. Nevertheless, the relatively small numbers who took this instruction yielded differences favorable to TV instruction for all four groups and all the differences were statistically significant except for the small sample of white girls.

In Grade 9 Physical Science, all but one of the four comparisons of gains favored TV instruction although only one was statistically significant.

In Grade 11 American History, learning outcomes were evaluated by semester. In the first semester, all four comparisons favored conventional instruction. In the second semester, the comparisons for boys favored TV instruction while the comparisons for girls favored conventional instruction.

In Grades 11 and 12, selected groups were able to view kinescopes of the Harvey White physics course. Among white students the comparison favored TV instruction; among Negro students it favored conventional instruction.

To sum up, 20 of the 34 comparisons of achievement favored TV instruction in large classes while the remaining 14 favored conventional instruction. Of these differences, 9 of those favoring TV instruction and 4 favoring conventional instruction were statistically significant at the 1% level of confidence.

The Test of Knowledge of Science and Scientists is a measure of understanding of what scientific activities and the lives of scientists are like. This test was given to 9th grade science students and to those taking physics in grades 11 and 12. All 6 comparisons of gains favored TV instruction, and two were statistically significant. Thus, there is evidence of a small, but consistent advantage in favor of TV instruction in promoting this type of learning outcome.

Comments and Observations: The role of the classroom teacher goes beyond a mere rehash of the televised part of the lesson. It leads the student into paths of individual effort on his own level. Freed from preparation and presentation of the basic concepts, the classroom teacher can ferret out the too-quiet student and point the way sympathetically to research by the bright student -- in short, teach the individual.

In this the classroom teachers have given evidence of being greatly successful.

The studio teacher should be the best teacher available. Her every word or visual should be selected because of its ability to cause learning to take place. Therefore, we have come to believe even more strongly that she should be selected from the ranks of outstanding teachers with much more attention to her qualities exhibited through at least a few years of teaching than to a superficial try-out before the television camera.

On the producer the teacher relies for trained objective criticism. He knows the possibilities of the medium. He can remain free of the many influences to which the teacher is subjected and can put the lesson into "good television" and "good teaching." Where the producer respects and values the purposes of teaching and where the teacher values constructive criticism from an objective viewpoint, there is no conflict.

In the Social Science courses we felt a great need for short film clips -- ten minute films dealing with important phases of American history -- which the studio teacher can use within the framework of his lecture. Live dramatizations are excellent when well-done, but strain the resources of rehearsal time. Presently available films are too costly and too often not pertinent enough to satisfy the requirements of economy of time.

A questionnaire consisting of thirty-nine items was prepared by a committee of teachers from the Stoddard Plan schools. This questionnaire was submitted to the entire faculties of the three schools. No names were signed; so it is hoped that the opinions stated were without pressure of any sort. The results showed acceptance of the Stoddard Plan and televised teaching as demanding more of the teacher in preparation, but a belief that it also stimulated the students to greater effort and learning.

DADE COUNTY, FLORIDA

Description: Since the achievement of the classes during the first year of the Dade County ETV project showed promise that televised instruction could increase the learning of boys and girls and since the experiment was effecting substantial economies in classroom space, it was decided to increase the number of participating schools to a total of ten elementary schools, twelve junior high schools, and six senior high schools in 1958-59. This meant that in these schools, two or three subjects would be taught in large groups with the help of television. Since these television classes were at different grade levels, no student was scheduled for more than one session with television or a total of thirty minutes in the junior high and senior high schools and forty-five minutes in the elementary schools.

The ten elementary schools involved in the experiment were so organized that one-half of the pupils in the fifth and sixth grades worked in small classes for one-half of the day while the other half of the pupils were in large classes. During the time that the pupils were in small classes, they participated in the regular work of the fundamental skills -- reading, writing, spelling, language and arithmetic. While they were in the large classes, they received televised instruction in music, art, conversational Spanish, health and safety, social studies, and science. It was here in the large group, containing from 150 to 160 pupils, that the children also received their daily telelessons in Old World history and Dade County history. The first and second grades were not involved in the experiment. The third and fourth grades were involved in only three of the ten schools. Those three schools were the original three which had begun the experiment during 1957-58.

The twelve junior high schools utilized television as a resource in teaching seventh grade science, eighth grade United States history, and ninth grade civics. The size of the classes varied from 300 to 600 students in each receiving room.

The six participating high schools utilized television as a resource in teaching tenth grade English, tenth grade biology, eleventh grade history, and driver education. The average size class in the senior high schools was 300, although some of the classes were considerably larger.

The twelve television teachers devoted full time to the presentation of the lessons. After the general content of the year's course of study was cooperatively determined, these teachers were given substantial leeway in determining the content and methods of presenting the individual lesson. The director of the station was responsible for the efficient transmission of the audio and visual signals. The station engineers were under his immediate supervision. Subject area supervisors and elementary zone supervisors served as consultants in the subject matter areas and helped supervise the large TV classes.

Most of the schools used auditoriums or cafeterias as television classrooms. These large areas were equipped with television sets at the ratio of one set for each 50 students. In the elementary schools which used cafeterias for the large television classrooms, care was exercised to schedule the instructional periods early in the morning and late in the afternoon to avoid any conflict with the serving of lunch.

For best acoustical effect in these large rooms, it was important to beam the sound directly to the viewers. This was done by detaching the television speakers and remounting them in a frontal position aimed straight ahead and slightly downward.

The TV sets used were 21-inch table models of a standard make, mounted so that the center of the screen was 5'8" from the floor, approximately the height of an average teacher. The sets were tilted on the mount so that the face of the screen would be perpendicular to the line of vision of the students. Where possible, the sets were mounted in such a manner that they would not have to be moved about the room. In some schools, permanent shelves were built for the stationary sets along the wall. For the sets located in the front of the room and in the seating area, special mobile cabinet stands were constructed, complete with roller casters and shelf space for storing materials. For better classroom control, all television sets in a given room were attached to a common switch, permitting them to be turned on and off simultaneously.

Each large classroom was equipped with an overhead projector. The classroom teachers used lapel microphones with fifty-foot cords to permit freedom of movement. Besides the standard telecasting equipment used by the station, a warning clock was used preceding each lesson. This permitted the teachers in the classrooms to time accurately for the reception of the telelesson.

Findings: At the elementary level, four of the comparisons favored TV instruction and two favored conventional instruction. In one instance there was a statistically significant difference, in favor of the TV instruction.

At the junior high level, four comparisons favored TV instruction and one favored conventional instruction. Again, in one instance there was a statistically significant difference in favor of TV instruction.

At the senior high level, five comparisons favored TV instruction and three favored conventional instruction. Here also there was one statistically significant difference in favor of TV instruction.

Comments and Observations: Subjective evaluations were made in April, 1959, through questionnaires completed by all principals and teachers in the participating schools, a 10% random sample of the pupils in television classes, and a 10% random sample of parents having children in television classes. The last were not necessarily the parents of the children answering the questionnaires.

The questionnaires, which were prepared by the ETV Evaluation Committee, were similar in format and type of question in order that the same variety of response could be obtained from each of the four groups questioned. This made possible a comparison of the opinions expressed by one group with those of another group.

The responses translated into percentages indicated that 90% of the elementary and 80% of the secondary principals were satisfied with the ETV program. Also, 90% of the elementary and 73% of the secondary principals thought their teachers were satisfied with ETV. In regard to discipline in the large TV classes, 40% of the elementary principals thought it was better than in regular classes while 60% thought it was about the same; 80% of the secondary principals thought it was better while 13% thought it was about the same and 7% thought it was somewhat worse. All 10 elementary principals surveyed thought the learnings in the TV classes were greater than in regular classes. Of the secondary principals, one did not answer this question while 50% of the answers rated the learnings about equal and 50% rated the learnings in TV classes a little higher than in regular classes.

A poll of the 958 teachers in the schools receiving televised instruction showed that 41.4% of them were satisfied, 22.6% about half and half, and 15.2% dissatisfied with the ETV program. Nearly 21% had no opinion.

The pupils reached by the Pupil Opinion Inventory expressed a high degree of satisfaction with their school program, 30% being very well satisfied, 46.4% satisfied, and 20.1% very much dissatisfied.

Two-thirds of the parents who returned the questionnaire were either satisfied or very well satisfied with the total school program and about 55%

with the total program and 17% with the TV program. Parents who are dissatisfied with the total program make up 9.9% of the group; dissatisfied with the TV program are 26.4%. A very small number failed to express an opinion.

DETROIT

Description: The first year of the Television Teaching Project was a year of exploration. While it was a successful and satisfying year in many respects, it was largely a year of learning to use the new medium. It was a year of meeting problems and of trying to find solutions to them. It was a year of pioneering in which a mixture of a spirit of adventure, a determination to see a job through, a scientific attitude, and a research point of view were needed to carry participants through the many handicaps and over, sometimes under, the countless hurdles. But the first year was ended and another was begun.

With that first year as background, the second year was begun with more confidence and know-how. This second year had some guidelines to go by; it had some precedents to follow; it had some experiences which could be tapped for at least tentative answers.

The first year had given the Television Teaching Project some on-camera teachers who had amassed many hours before live cameras, some producers who had experienced producing a daily television lesson day after day and week after week, some classroom teachers who knew what it meant to teach a class of 150 pupils using television as the chief medium of instruction, some principals who as a matter of policy included television courses in their school schedules, and some pupils who accepted a television course as a natural part of their school program. As a result the second year increased the successes and the satisfactions of the first year. The frustrations were lessened, the answers to problems were easier to find, and the results both on the air and in the classroom were more gratifying. True, the second year brought with it problems and disappointments, but they were fewer in number than those of the first year and they were frequently overshadowed by the many highly satisfying experiences. A year of experience had helped on-camera teachers to teach better lessons, producers to produce them more capably, and classroom teachers to use them more effectively. The team approach to television teaching was paying dividends in lessons well-taught and effectively used.

The number of experimental schools was increased from the original nine to fourteen for the second year. The additional five were elementary schools, located in the five districts in Detroit which did not have experimental schools in the project during the first year. These, together with the three original elementary schools, gave the project wide coverage. During the second year every district in the city was represented on the elementary level. So the project included children from a wide range of cultural, racial, nationality, and economic backgrounds. On the secondary level the six schools of the first year continued in the project.

During the second year a number of changes were made in the courses taught by television. Each of the original courses was revised in the light of the experiences of the first year. Course content was changed somewhat to capitalize on the strengths of visual presentation by means of television.

Some new material was added, some original material was deleted. Some units were expanded, others were shortened.

A major change was made in the Spanish course for third graders. The telecast time was reduced from 30 to 20 minutes per day. This was done because the first year's experience indicated that the 30-minute period was too long for the younger children. Also, a second-year course in conversational Spanish was added. This was done in order to give those pupils who had had a year of Spanish in 1957-58 a second year of the language. It was generally agreed that in order to have a lasting effect language instruction should continue for longer than one year. According to present plans it will be continued for a minimum of three years.

A special feature of the producer-director situation in the Detroit Television Teaching Project is that producer-directors are certified teachers and in most instances they have training in the subject areas which they direct.

Findings: As during the first year, the evaluation program involved a "before" and "after" testing program for students in the experimental classes and in corresponding control classes.

Experimental and control groups were equated on the basis of four factors: intelligence, scores on an initial subject-matter achievement test, scores on an initial listening test, and sex. Priority for matching purposes was given to the first two of these factors.

In general, the results of the second year of the experiment substantiated the findings of the first year. Students in the large television classes learned subject-matter content as well as students in conventional classes. There were, however, some differences in details in the results for the second year compared to those obtained in the first year.

The results of the first year on the subject-matter final test showed all differences between experimental and control group means to be in favor of the experimental groups, with four of these differences being statistically significant. For the second year four of the differences favored the experimental groups, one being statistically significant, while three favored the control groups, with none statistically significant.

In the case of the final listening tests for the second year, five of the differences favored the experimental groups and two favored the control groups. This is to be compared with the first year's results in which three differences favored the experimental groups and four the control groups.

Evaluation of the courses in conversational Spanish followed the pattern begun in 1957-58. The general conclusions of the evaluators was that on the basis of the results of these tests pupils were quite successful in learning to understand Spanish words and phrases. This success and the fact that children were learning to speak Spanish were factors which led us to expand our program to include conversational French during the third year of the experimental project.

Comments and Observations: Before the final Spanish test Mary, in grade 4, asked her teacher if she might have 13 extra copies of the test. She wanted them, she said, to test her own class which she taught every afternoon in the basement of her home. The class was composed of neighborhood youngsters who did not have the opportunity to take the television class in Spanish -- brothers, sisters, neighborhood children above or below grade four, and parochial school children.

At one school, the television program has made it possible to give each teacher in the building two coordinating periods per week. These periods are used for consultation with pupils needing extra help and often with parents or for additional preparation. It also has been possible to assign two teachers, two periods per week, for remedial reading or remedial work in other subjects where needed.

Planning for the Television Teaching Project has been carried on in a series of workshops during the summer and on Saturdays. During the summer of 1958 there was a two-week workshop for members of the various subject-matter groups. Further sessions of these groups were held on three Saturdays in the fall of 1958 to continue the planning and work done during the summer.

Participants in the workshop included supervisors, on-camera teachers and alternates, producers, classroom viewing teachers, and principals. The workshops produced the following materials: a bulletin setting forth the course outline for each of the courses taught by television, extensive guides for classroom teacher use, and various kinds of pupil materials. The pupil materials varied with the several subjects. Examples are unit tests, lesson sheets, reading lists, and illustrative materials.

During the year on-camera teachers and classroom teachers were in constant contact with each other by means of telephone. This practice has been especially helpful in correcting mistakes and in extending the use of teaching procedures which teachers in the schools and their pupils found particularly helpful.

Two important changes have been made in the courses of the Television Teaching Project for the year 1959-60. A new foreign language is being introduced -- conversational French at the third-grade level. This move to French at the third-grade level is part of a long-range language program to expand the teaching of foreign language at the elementary level to include a number of languages: Spanish, French, and German. Each year one of these will start at the third-grade level and the children will be given the opportunity to continue instruction in the language for a minimum of three years. If this schedule is carried forward, German at the third-grade level will be introduced in 1960-61.

Certain corrections in the rooms used for the television classes in the junior high schools have practically eliminated the acoustical problems of the first year. A curtain, separating the lunchroom work area from the area used for the television classes, was installed in the lunchroom at one junior high school. At another, the television classes were moved from the auditorium to the lunchroom and the lunchroom ceiling was covered with acoustical tile. At a third, the ceiling was lowered about three feet by putting in a false ceiling and covering it with acoustical material. All of these corrections have helped the audio reception of lessons considerably. Teachers and pupils at these schools appreciate greatly the results of this acoustical treatment.

JEFFERSON COUNTY, KENTUCKY

Description: The project in the greater Louisville area in 1958-59 consisted of two separate and distinct parts, each having its own budget but having leadership personnel which served both projects. One of the parts was the Jefferson County Project, covering five elementary schools by closed-circuit from station JCEL. The other was an open broadcast project covering ten high schools in Jefferson County, three junior high schools in Louisville, a junior high school at Anchorage, Kentucky, and five high schools in southern Indiana -- Clarksville, Charlestown, Jeffersonville, New Albany, and Silver Creek.

In the closed-circuit project two additional schools were added. The original schools were reached by microwave. The signal was then transmitted by microwave to a school not in the program and was relayed from there to the two new schools by coaxial cable. The programs originated in a studio owned by Jefferson County and located at Hawthorne School. As in the first year of the project, the studio teacher was her own producer, and she was assisted by one technician who operated all the equipment.

The elementary television schools operated on the Stoddard plan of large classes for half the student's day and small classes, twenty-five or under, the other half-day. Art, music, physical education, and the television classes -- science, social studies, and conversational Spanish, were the big class areas. All other subjects were taught in small classes.

Science was taught three days a week, social studies two days a week, and conversational Spanish ten minutes daily. The telecasts were received by grades three and four together and grades five and six together. One television classroom teacher, assisted by an aide, took care of all television classes, giving her a total load for the day of 400 to 650. Additionally, fifteen minutes a day was devoted to assistance for retarded readers.

The open-circuit project was operated by the Kentuckiana Council, which is made up of the superintendents of the participating school systems. The Council determined the general policies to be followed as to subjects offered, financial arrangements, physical set-up, and employment of personnel. The cost was prorated among the participating schools on a per capita basis of those receiving televised instruction in each school. The programs -- general science, English II, and American History -- originated in a commercial studio, WAVE, as a free public service, during the time WAVE's network programs were on the air. The programs were cabled to Channel 15's UHF transmitter, located at the Louisville Free Public Library in whose name the channel is licensed. The public schools have a priority on the use of the channel during their regular operating hours. The effective range of Channel 15 is about twenty to thirty miles depending on local interferences.

Materials consisting of course outlines, daily lesson plans, and unit tests were sent out from the staff office to the TV classroom teachers. Regular in-service meetings were held monthly on Saturday mornings to clear up difficulties and to plan constructively for better teaching.

The class sizes ranged from 90 to 432. The classes from 90 to 120 were in Louisville and Indiana. In one of the Louisville classes two teachers were assigned to the class and alternated responsibilities although both were present in the class. A similar situation prevailed at Jeffersonville, except that one of the teachers was the lead teacher at all times. At Clarksville, an aide assisted two teachers. At Silver Creek, seniors were used to assist the teacher during class. At New Albany and Charlestown, the teachers had no assistance in the class itself. The New Albany teacher did receive student assistance in routine matters outside the class. During the year, considerable savings in teacher time and classroom space were effected.

Findings: Television teaching scored higher than traditional teaching. Of the twelve classifications taught, six favored television. Of the six, three were considered statistically significant. Of the six favoring traditional classes, only two were statistically significant. Both the experimental and control medians were above the national norm.

When the course results were broken down according to achievement levels in the elementary subjects 65 calculations favored television and 54 favored the traditional method. On the basis of a year or more of gain of one method over the other, the television method had 19 such gains and the traditional method had 6 such gains.

Eighty-two percent of the television pupils in the elementary schools were above national norms as opposed to seventy-eight percent for the control school.

The greater gains were made in the third and fourth grades. It is believed that the difference is due to two factors: the lower grade tests had greater relevancy to the courses taught, and the instructional range for the upper grades was much wider.

In all elementary subjects the growth of the low, middle, and above average groups was good. In all areas except third grade science, the superior groups profited less than other groups, probably because of the relevancy of the tests to the achievement level of the child and the course of study used. The tests also showed similar results, but still less favorable, for superior students in small classes. Again, the tests are probably not constructed to measure sufficiently the upper levels.

In the Kentuckiana phase of the project, two comparisons favored the television classes (one by a statistically significant margin) and two favored the control classes, but not significantly.

Comments and Observations: Both the studio teachers and the classroom teachers were enthusiastic concerning the experiment. The chief objections voiced by the teachers were in the area of hearing, seating, lighting, grading, individual differences, student responsibility, and some weaknesses in the team approach to teaching. All these problems will receive attention and will no doubt be largely eliminated as the program progresses.

The studio teachers and classroom teachers believed that more was presented to the students than ever before because of the preparation time allowed the studio teacher. They all agreed that a higher degree of student responsibility was required for the best results in large classes, and they believed that educational television will do much to develop self-reliance and initiative on the part of the student.

Student-teacher conferences were quite helpful and will become more helpful as better techniques for such conferences are developed. Most teachers said that they studied the cumulative records and kept better files on students than before in an effort to compensate for lack of personal contact with students. All agreed that better use was made of community resources by television.

Teachers felt that through necessity, they used a greater variety of teaching techniques. Many ways of cooperation are gradually being developed that will be helpful.

Student reactions varied considerably. All students were invited to write what they felt concerning educational television. In some instances, the teachers summarized the results in each school, and in others the student opinions were sent directly to the director's office. From these surveys the following conclusions seem to be warranted:

1. Some students objected to the steady concentration required by television, a result which teachers felt was one of the good effects.

2. Most of the students felt that the quality of the telecasts was good, a testimony that was likewise borne out by many visitors.
3. Many students expressed dislike for educational television. In most cases of this sort, it proved to be dislike for large classes, the classroom management, the steady concentration required by television, or objection to the amount of work required rather than dislike for education by television. Many of these same students disliked other classes as well.
4. Good students had a tendency to resent any time the television teacher used in explaining things that seemed obvious to them. In other cases, they felt that visuals were used when they were not necessary and they felt that time was being wasted. Perhaps they had a valid criticism; on the other hand, the slower student might have needed the extra help.

Principals generally expressed confidence in the program. Some were highly enthusiastic while others, who have had greater difficulty for one reason or another, expressed themselves more cautiously. The elementary principals were even more enthusiastic after the second year. Solutions were found for many of the first year rough spots, and there was a strong belief that the third year would be even better. In nearly all instances, the principals felt that the in-service growth of teachers has been one of the very gratifying results.

KANSAS CITY, MISSOURI

Description: The mutual advantages of Kansas City school participation in the National Program were discussed by school and Foundation representatives beginning in January, 1958, and by June official approval had been given to:

1. Kansas City participation in the project.
2. Cooperation by the three local commercial TV stations.
3. A first-year budget for the local project.
4. Selection of three schools for participation in the Kansas City experiment and three subjects to be telecast -- fifth grade science, health and safety, eighth grade general science, and tenth grade World History.
5. Naming a project supervisor.
6. Cooperative arrangements with the University of Kansas City for a summer workshop, and provision of a study grant for selected teachers.

It was in the course of the 1958 summer institute that many of the working details of the Kansas City plan were developed, through the combined efforts and judgment of teachers, principals, institute faculty, and central office personnel. Courses were outlined, objectives stated, initial lesson plans written, understandings arrived at with commercial station managers and program directors, and plans made for distribution of outline materials to schools and any interested persons in the area.

On September 8, 1958, Monday of the first full week of school, the TV operation went on the air as planned, and continued every Monday through Friday to June 3, 1959. Special programs were provided for school holidays.

An office approximately the size of two regular classrooms was provided in a downtown elementary school, with desks, files, reference books, art supplies, projectors, and typewriters. Here the project personnel did most of their work.

Mimeographed lesson plans were furnished on request to any school in the TV receiving area, and requests were received from distances up to about fifty miles in all directions. Generally speaking, requests for the three-week outlines covering the elementary school course in health, science, and safety were from schools where whole classes were watching the program; requests for outlines in the other two courses tended to come from individuals or smaller groups. The natural difficulty in scheduling high school classes around a given TV time explains most of this difference.

In addition to the outlines covering each three-week period, student outlines were prepared and supplied to the students for the daily lessons in World History. Run-down sheets summarizing the audio and video sequence for each lesson were made for all three courses.

Findings: The results of the tests given at the end of the experiment indicated that the television class pupils made higher scores than the control class pupils for each subject tested.

How significant are the measured differences between the television and control groups, conceding that some differences might be expected as the result of normal fluctuations?

Statistical tests of significance were employed to indicate the probability that a difference of the magnitude found would be expected to occur due to chance. We found that the chances were less than one in one hundred that the differences between the experimental and control groups were due to chance. The TV classes made significantly higher scores than the control classes in subject achievement as measured by standardized tests.

Comments and Observations: The indication is that pupils in experimental classes achieved more than would regularly be expected, and that most of them enjoyed doing it. They liked the wide variety of visuals and other teaching aids used by the studio teachers, and in this they were supported by the classroom teachers who saw the unique advantages of televised instruction as one of the major strengths of the program. Other major strengths, as reported by the classroom teachers, centered around the uniform presentation and coverage of subject matter, and the value of TV instruction for all ability groups -- high, average, and low.

The most frequent complaint of the pupils was the lack of opportunity to ask questions at the time they arise. The classroom teachers agreed with this, and designated such lack as a major weakness of the program. Other weaknesses noted by the classroom teachers involved less personal contact with individual pupils, difficulty in pupil note-taking, and the detrimental effect of large numbers of pupils on effective discussion.

Many teachers in schools other than the experimental schools used the TV lessons. Reports of elementary school principals indicated that between five and six thousand fifth-grade pupils in Kansas City alone used the lessons. Correspondence from school people in areas surrounding Kansas City indicated that many more pupils, both elementary and secondary, were being reached in those schools.

MILWAUKEE

Description: The subjects in which television was used as a medium of instruction in the Milwaukee project were tenth grade biology and eleventh grade United States history, ninth grade general science, and an integrated program of fifth and sixth grade science, health and safety.

The schools selected for the experiment were chosen on the basis of several factors -- the space available to accomodate large groups, the relative stability of their school enrollment, and the diverse locations throughout the city. The schools included in the experiment were four high schools, four junior high schools, and four elementary schools.

In the senior and junior high schools, pupils met in large classes three days each week for direct television instruction and class participation. In addition, pupils met the other two days of the week in classes numbering approximately thirty pupils.

Pupils met in the television room Monday, Tuesday, and Thursday to view the telecast. In addition, each pupil was assigned to one of seven sections meeting twice each week. These sections, in which discussions, laboratory work and individual pupil activities took place, consisted of approximately thirty pupils. The actual scheduling of these sections was left to the discretion of each individual school.

In some schools it was not possible to enroll the approximately 200 pupils in the television class; therefore, it became necessary to decrease the number of sections proportionately.

In the elementary schools the basic structure of the self-contained classroom was maintained. However, six of the classroom teachers in each of the schools combined their classes for thirty minutes a day for instruction in science, health and safety. During this period, one or two of the teachers remained with the large group to carry on classroom activities and view the telecasts. The other teachers used this time as a preparation period in their regular classrooms. The assignment with the large television group was rotated during the semester among the six elementary teachers.

Within the school buildings, large rooms were used to accommodate the television classes. The type of room depended upon the available space within the individual school. Cafeterias, auditoriums, and study halls were used. Twenty-one inch table model television sets were used in the rooms. The minimum number of television sets in a room was four, and the maximum was ten, with the average about seven. In general, no child sat farther than thirty feet from a television screen.

During the summer of 1958, workshops were conducted for the purpose of planning for the subjects in the television experiment. All teachers involved in the experiment and members of the supervisory staff met for a period of four days for purposes of orientation, planning the scope and sequence of the subjects, and discussing the role of the classroom teacher.

From this group, a committee of teachers was selected in each subject area and these committees met daily -- seven hours each day for a period of six weeks -- planning the details of each subject. The committee worked with members of the supervisory staff to prepare teacher guides. The guides contained the concepts to be taught for each day, together with suggested preparatory and follow-up activities and assignments. These booklets averaged 120 pages for each subject and were duplicated and distributed to the teachers involved in the experiment. In addition, the studio teachers began planning the telecast lessons during the week preceding the opening of school in September, 1958.

Telecasting began September 8, 1958, and continued to June 4, 1959. Over four hundred lessons were telecast during the year. The television lessons at the secondary level were telecast three days a week, Monday, Tuesday, and Thursday, in each of the three subjects. Junior and senior high school television lessons were thirty minutes in length; elementary school television lessons were fifteen minutes in length and were telecast Monday through Thursday each week. Friday of each week was used as needed by the elementary classroom teachers for evaluation, summarization, and other activities which were planned for during the summer.

Findings: For 11th grade American History and 10th grade biology, there was a statistically significant difference in achievement in favor of the TV group; in 9th grade general science there was a slight difference in achievement in favor of the TV group, but it was not significant; in elementary science, health and safety for the fifth and sixth grades, there was a statistically significant difference in favor of the TV group.

To sum up, each of the four comparisons favored the TV group; in three of the four instances the difference was statistically significant.

Comments and Observations: In the spring of 1959, meetings were held with the teachers and principals involved in the television experiment. At these meetings each individual responded anonymously to a written questionnaire. After the questionnaires were completed, they were tabulated and the results were discussed by the groups.

At the elementary level, 95.8% of the teachers and principals involved in the experiment expressed the opinion that television has a role to play in education in the Milwaukee Public Schools. However, only 25% of the elementary teachers expressed the desire to continue in the experimental method of teaching. Over one-half of the elementary teachers requested that the class size be reduced.

At the secondary level all of the teachers and principals involved in the experiment expressed the opinion that television has a role to play in the Milwaukee Public Schools. The large majority of the teachers (87.5%) expressed their desire to continue this experimental method of teaching.

The majority of all the principals involved in the television experiment expressed the opinion that the telecast programs have promoted professional growth on the part of the classroom teachers involved in the experiment.

Over one-hundred unsolicited letters were received from pupils, teachers, principals, and interested lay people regarding the television experiment. All of these letters were favorable. No unfavorable letters were received. Following are excerpts from some of these letters:

Pupils involved in the experiment:

> "We liked the safety lessons, and will have a safe summer."
>
> "I have never had as much fun with any other teacher as I did with you. I will never forget you."

Pupils not directly involved in the television experiment:

> "The part I've enjoyed most is chemistry. I have read several new science books on my own."
>
> "We are lucky to have had a science course on TV. I wonder what the colonial children would think of our modern school."

Principals and teachers outside the experiment:

> "The boys and girls are learning much. We teachers can learn a great deal, too."
>
> "Our teachers would like to continue this experiment for the second semester. Would it be possible for you to send us an elementary teacher guide?"

General public:

> "The lesson on mental health should have been seen by all adults as well as science students."
>
> ".....the programs I should especially miss if dropped are: Japanese Brush Painting, Creative Design World in Action, and Miss Lois Deckow."

Member of the Milwaukee Radio and TV Council:

> "I have the picture of TV sets at the head of the class in Milwaukee schools as pupils watched the first programs in a four-month experiment of telecasting school lessons. Today -- one year later -- it has certainly been proven a big success, and more schools will want to consider lessons on TV."

College professor:

> 'Your whole manner of presentation through the use of audio-visual aids should make every high school student not only more acquainted with the history of the United States, but more interested in it also. Although I teach history to our college sophomores, I find that your lectures are most helpful to them -- as well as to myself -- as a review plus a variety of facts which are new experiences."

State assemblyman:

> "Keep up the good work. I only hope that statewide educational television will be able to benefit from the progress that Milwaukee Schools have made....."

NEBRASKA

Description: In the Nebraska In-School Experiment three elements are involved in instruction: correspondence study, television, and a local supervisor. The students have access to the usual materials of instruction including textbooks, references, laboratory equipment, and general supplies.

A correspondence study syllabus or study guide serves in place of the local teacher. It is designed to provide the basic organization for the course, set up learning activities, direct the student in his use of instructional materials, and provide for reports which are submitted to the University for evaluation.

The television or studio teacher gives the day by day direction to the program and supplements and enriches learning opportunities. He takes advantage of the opportunity which television presents to stimulate and enhance learning through the use of auditory and visual media.

The supervisor is the connecting link between the local class and the University. The supervisor is a certified teacher but in most cases has little or no background in the subject he supervised. The primary duties of the supervisor are to see that conditions conducive to learning are maintained and that physical factors do not detract from the instructional situation. He takes care of operational details such as administering tests, distributing materials, mailing pupil reports to the University, and supplying information as requested by the correspondence study or studio teacher. An important responsibility is that of keeping other staff members and the general public informed about the program.

All telecasts originate in the campus studios of KUON-TV, Channel 12, which is entirely University owned and operated. The reception rooms are traditional classrooms equipped with one 21-inch television set.

Thirty-two schools enrolled students in the Nebraska In-School Television-Correspondence Study Program at the beginning of the 1958-59 school year. Three schools representing four classes participated only one semester. A total of eleven classes dropped at the end of the first semester while two were added. A total of sixty-one individual classes participated during the year.

The twenty-nine participating schools ranged in size from a 2-teacher high school with 44 pupils to an 86-teacher high school with 1728 students. These schools employed a total of 323 teachers or an average of 11.1 teachers per school. If the two large schools, Lincoln and Beatrice, are omitted, the mean number of teachers per school becomes 5.3 with the mean number of pupils being 64.

In most of the schools, not all teachers nor pupils were involved in the television-correspondence study program. Typically, one teacher in the local school served as supervisor for all television-correspondence study classes, although in schools where students were enrolled in several subjects two or more persons were given this responsibility.

At the beginning of the year, prognosis tests were given to a total of 528 students who had indicated an interest or who had registered in one or more of the nine subjects offered. Registration changes throughout the year reduced the number of students to 366 at midyear and 352 at the end-of-year.

Courses taught by the television-correspondence method were:

Art	Grades 10-12
Beginning Algebra	Grades 9-10
Advanced Algebra	Grades 11-12
Geometry	Grade 10
General Math	Grade 9
Chemistry	Grades 11-12
Physics	Grades 11-12
Spanish	Grades 10-12
English	Grade 11

Findings: In the testing program, students in the experimental schools were compared with students in other small high schools (where less than 150 students were enrolled) and also with students in large high schools in which more than 150 students were enrolled.

In Beginning Algebra (Grades 9-10) the small school control group ranked slightly higher than the experimental group which in turn ranked higher than the large school control group.

In Advanced Algebra (Grades 11-12) the experimental group ranked higher than both the small school control group and the large school control group.

In 10th grade Geometry, both the small school control group and the large school control group ranked higher than the experimental group.

In 9th grade General Mathematics, the experimental group achieved at a higher level than the large school control group. (There was no small school control group in this subject matter area.)

In Chemistry (Grades 11-12) the large school control group ranked higher than the small school control group which in turn ranked higher than the experimental group.

In Physics (Grades 11-12) the large school control group ranked higher than the experimental group. (There was no small school control group.)

In Spanish (Grades 10-12) the large school control group ranked higher than the experimental group. Here the control group was made up of students from a cross-section of schools, large and small, where Spanish was taught.

In 11th grade English, the experimental group ranked higher than both the large school control group and the small school control group.

In Art (Grades 10-12) the control group ranked higher than the experimental group. (Here again the control group was made up of students from a cross-section of schools, large and small, where Art was taught.)

Student responses to an attitude survey show that in general students' attitudes toward the television subjects in which they were enrolled and toward the television teachers of these subjects did not differ from attitudes toward subjects studied in regular classrooms and toward the teachers of these subjects. However, attitudes of students toward classroom teaching as a method of instruction were more favorable than attitudes toward television teaching as a method.

Comments and Observations: Analysis of the results of achievement testing indicates that in three of the nine subjects offered the experimental group outperformed the control groups. In six of the nine subjects, results favored the control groups. Experimental results also indicate that the effectiveness of television-correspondence instruction is not related to academic ability.

While not all problems attendent upon television-correspondence instruction have been resolved, resources heretofore not available to small schools have been incorporated into their programs. Experimentation indicates that a combination of television and correspondence study can be effective in enriching the curriculums of these schools.

NORFOLK

Description: In-school telecasts have been used for direct teaching in Norfolk's classrooms for the past two years. Lessons have been presented over a commerical station, WVEC-TV, daily for two and one half hours per day. Five elementary schools, two junior high schools, and three senior high schools participated in the experiment for the year 1958-1959. This was an increase of one elementary school in the experiment over the previous year. However, sixteen other schools in the city received the programs regularly while many schools in outlying districts also tuned in.

During 1958-59 the elementary televised program was broadened by reducing the thirty-minute period in science to twenty minutes and adding a ten-minute Spanish lesson. Art, music, and literature rotated on Fridays in place of the science program.

The experiment in each elementary school involved between 200 and 250 pupils in grades five and six. A child's day was spent in five areas: (1) the regular classroom, (2) the television classroom, (3) the art resource room, (4) the music room, and (5) the playground or multi-purpose room.

Regular classroom groups are organized, according to the Stoddard Plan, to contain not more than 25 pupils. The child's day is divided into halves; one half is spent in the classroom and the other half in the activity program. The pupils are divided into two groups (fifth and sixth grades).

The responsibilities of those in charge of the large group are similar to those of any classroom teacher except that (1) they have large classes to handle, (2) they have television as the main medium of instruction for thirty minutes each period, and (3) there are always two people present. The teacher has the responsibility for carrying on discussions or whatever form of follow-up she chooses to do. The other person aids by assisting individuals or groups of pupils, by preparing daily attendance reports for the office and checking attendance in registers. She also sees that the TV sets are working properly, helps to keep order, distributes and collects notices and papers, etc.

The junior and senior high school schedules had not been reorganized for television teaching. During the telecast time, they utilized building space which was previously empty. The teachers averaged about 100 students each in a large group and taught three additional classes. This gave them an extra free period for planning and grading papers.

During the summer of 1958 a three week workshop was held at the WVEC-TV studio. In the course of this workshop, the on-camera teachers met with the receiving teachers who were in charge of large classes. They revised and improved the curriculum that had been used the preceding year. Teachers who were to teach a new subject on television had to reach agreement with the receiving teachers as to the scope and sequence of the course. Also, they planned activities which could be held in the large classrooms. The teachers were paid for attendance at the workshop.

In addition to the summer workshop the television teachers were employed for the eleventh month. It was during this time that they worked out the lesson plans in detail, gathered visuals, did research, contacted resource people, made out guide sheets and pupil key sheets, finished the details of the curriculum guide books planned by the workshop groups, and learned to manipulate the cameras.

At the request of principals and teachers of the elementary experimental schools it was arranged to have a mid-term shift of the 5th and 6th grade programs so that the children who received the telecasts in the morning might have their skill classes at that time.

Findings: Evaluation included a "before" and "after" testing of students in both the experimental and control classes. Analysis of covariance was employed throughout rather than the matched pairs method largely used in 1957-58.

The tests were selected by the studio and classroom receiving teachers as the best standardized instruments available for the purpose.

A study of the statistical report from the testing program shows that the difference between the achievement of pupils receiving instruction by television and that of pupils in the regular classroom is relatively small. In the fifth grade some small groups benefited more in the regular classroom. In the sixth grade the pupils instructed by television showed achievement equal to or greater than pupils in the regular classroom.

In the eighth grade history pupils in the regular classrooms showed a slightly greater gain than those taught through television. The difference, however, was not significant.

In ninth grade science pupils taught through television showed greater gains than pupils in the regular classrooms, but again the difference in achievement of the two groups was not significant.

In plane geometry the television classes showed a greater gain than the regular classes, but the difference was still not significant.

To sum up, out of 9 comparisons made, 6 favored the TV classes and 3 favored the regular classes. There were two statistically significant differences in favor of the TV classes and one in favor of the regular classes.

A questionnaire, "Sizing Up Your School Subjects", was used with fifth grade science pupils and tenth grade geometry pupils to determine pupil attitudes toward the subject received by television. In the fifth grade, science was chosen as a favorite subject by more pupils in television schools than in non-television schools. The choice among Negro children was significantly in favor of science when presented by television. Tenth grade geometry was a favorite more often when not received by television.

Comments and Observations: Three hundred fifty qyestionnaires were sent to the parents of the fifth grade pupils who were receiving television instruction in white schools; two hundred seventy-seven of these were returned. Forty-six percent said that they liked television instruction a great deal for their children. Thirty-eight percent liked it a little, and sixteen percent did not like it at all.

Fifty-nine percent would choose television instruction for their children again next year, twenty-one percent said they would not, and twenty percent said they were undecided.

Sixty-two percent said they liked having their children exchange classes.

Seventy questionnaires were sent out to the parents of the fifth grade pupils in the one Negro school where science is taught by television. Eighty-four percent were returned.

Eighty-three percent said they liked educational television for their children, fourteen percent liked it a little, and three percent said they didn't like it at all.

Ninety percent of the parents said they would choose TV for their children again next year, three percent said they would not, and seven percent said they were undecided.

Ninety-two percent said they liked having their children exchange classes.

Teachers and principals also were asked to give their reactions concerning the strengths and weaknesses of the program and suggestions for improvement. Following is a summary of these reactions:

Strengths:

1. A re-thinking of the curriculum and course objectives was brought about through the use of television as a medium of instruction. The television courses both for studio and follow-up teachers were more carefully planned and better organized because the teachers relieved from other duties had more time for this purpose. All children were assured of good teaching from superior telecasting and receiving teachers. The studio teachers were able to produce difficult and expensive experiments not within the scope of the conventional classroom teacher. The extensive use of visuals and other resources unavailable to all teachers enriched the program -- for example: the Norfolk Feldman String Quartet; Fran Martin, children's author; Mrs. Virginia Pollack, a sculptor from New York; valuable museum pieces; Dr. Tabor with his space suit -- the first man to simulate space flight; Carl Sandburg's address to the Joint Session of Congress; and Frederic March's reading of the Gettysburg Address.

2. Television proved to be a means of in-service training for teachers and student teachers. Student teachers are more easily orientated through observation of the techniques of the television teacher and the classroom receiving teacher.

3. Parents and teachers reported that children were making more use of the library. An increase in reliance of the student upon himself in finding the answers to his various problems was noted.

4. There was a noticeable improvement in attendance and punctuality problems and no problems in discipline.

5. Children apparently have become better listeners, viewers, and note-takers. Self-discipline and self-reliance are also becoming evident as they do more for themselves and control their actions when passing through the halls with little or no teacher supervision, and when performing in large groups with less teacher supervision per pupil. Also they work in the library independently without the presence of their classroom teachers as has been the usual practice.

6. Some schools did not have to go on double shift because the large classes were utilizing space never before used to its fullest potential. Example: auditorium, band rooms, cafeterias, etc.

7. Teacher time was saved and used for special small classes, remedial work, counselling, and other duties.

8. More uninterrupted class time was provided to cover skill subject material in the elementary organization. Also the size of these skill classes was reduced.

9. The teaching of Spanish in the elementary schools would not have been possible without television.

10. Judging from the test results, both the control and television groups made significant gains; therefore, it would seem that the experiment has spurred all concerned to greater efforts.

Weaknesses:

1. Teaching large classes by means of television leaves little room for teacher-pupil planning and little time for working with individual children. (However, the teacher in the small classroom has more time for this type of experience.)

2. Lack of integration of subjects taught by television in the elementary schools with those taught in the classroom is apparent. (It should be noted here that the small classroom teacher has a copy of the day by day lesson guide. It is felt that in some schools there needs to be more coordination between the television receiving teacher and the skill classroom teacher. This is a problem of the individual schools.)

3. There is no chance to ask questions during the telecast. (This, however, enables the television teacher to give a well-organized, uninterrupted lesson. It is felt many questions are asked by attention seekers, and others will be answered by the studio teacher before the lesson is over. Also the receiving teacher can answer any questions which may arise -- after the telecast.)

4. There were occasional techincal difficulties.

5. The necessity of grading each student in the large group creates an evaluation problem for the teacher.

6. Difficulty of maintaining discussion in large groups and of individual participation was present. (As the classroom teacher receives more training and experience in the effective handling of large groups, this problem will be reduced.)

NORTH CAROLINA

Description: The number of schools in the North Carolina ETV project was more than doubled in 1958-59 by new school systems entering the project. The program with one or more classes was carried by 81 schools in 43 school systems, classes ranging in size from 90 to more than 200. There were 12,000 students participating. More than 200 additional schools and approximately 6,000 students had a part unofficially, using the telecast lessons and outlines in their classes. These were in schools not large enough to enroll the minimum of 90 students.

Because the lessons were broadcast over an open circuit, it is easily possible that several thousand parents and other citizens viewed them in their homes and had the chance to learn what was being taught to their high school population. Many communications, written and oral, came to the office from adults all over the state who listened in occasionally or more or less regularly.

Two studios, located at Chapel Hill and at Greensboro on the Woman's College campus, alternated in broadcasting the televised courses. Since the University's signal WUNC-TV could not be received throughout the entire area, six commercial channels contributed one or one-half hour of time per day giving almost complete state-wide coverage and intensifying coverage in the geographical areas already involved.

Only one course was offered by TV at each grade level. This means that the program of the high school student was altered only to the extent that one of his or her subjects was taught partially by television. The courses were 11th grade American History, 10th grade World History, 9th grade Physical Science, and 8th grade Mathematics.

During the year a mobile unit, which is owned by the University of North Carolina Educational Television Station, was used in museum, library and legislative halls to bring further enrichment to the students.

The Director of the program in addition to alternating between his office at the Woman's College, the home of one of the studios; and Chapel Hill where the other two telecasts took place, visited in every area of the state but not in every classroom. He was able to observe the facilities and have conferences with principals and teachers. During the year the Director traveled more than 18,000 miles in his visitations.

Findings: In each school where there was an official class and a control group, standard subject matter tests were given in September. Different forms of the same tests were given to the same students in May. The tests used were: Crary American History, Cooperative World History, Cooperative General Science, and SRA Arithmetic. A comparison of the scores was made by the Statistics Bureau of State College of the University of North Carolina using the analysis of covariance.

The most interesting aspect of the outcomes is that they follow the same pattern as the outcomes of the experiment in 1957-58. In both years American History, General Science, and Mathematics showed adjusted means for the TV groups in excess of the adjusted means for the non-TV groups. In both years neither World History nor General Science showed a statistically significant difference between the means of two groups. In both years, the most striking (and statistically significant) differences occurred in the Mathematics and American History courses.

Comments and Observations: The Director talked to scores of lay groups and received enthusiastic support. The Governor and members of the Legislature were informed about what was happening, and many inquiries from them and from individual parents were received and answered by mail.

Comments from students to their studio teachers continued during the second year of the program in increased numbers. In several instances the entire membership of the class wrote to the teacher in appreciation of what had been gained. These letters were not sponsored by the classroom teachers but came spontaneously from the group, particularly after a visit from the studio teacher to the classroom.

No attempt was made during the year for any objective evaluation beyond that of knowledge of subject matter. Subjectively, however, we feel that the following results are very clear:

1. Students gained an ability to take notes.
2. They were more discerning in discussion.
3. They were exposed to a larger body of facts.
4. Excellent attitudes were developed (during the second year, there were no major discipline problems in the large class.)
5. There has developed a higher standard of teaching even in schools and classes not directly concerned with television.

Nine teachers from the North Carolina project participated in the National Workshop. Many new ideas were gained. Methods of telecasting and receiving are being improved as a result of that participation. Bringing together teachers from different sections of the country and concerned with different projects has made available a body of material that will serve our teachers well.

The State Legislature evidenced its interest in the television experiment by appropriating $25,000 for 1959-60 and $50,000 for 1960-61 to continue the experiment for an additional two years. This money has been appropriated to the State Department of Education and in turn will go through school units to the financial support of the North Carolina experiment.

OKLAHOMA CITY

I. Elementary School Project

Description: The same four elementary schools continued for the second year in the Oklahoma City project of televised teaching. Forty-four teachers and 1725 students in grades four, five, and six participated. One-half of the students worked in small classes for one-half day while the other half of the students were in large classes. They alternated positions and classes for the second half of the day. Basic skill subjects were taught in the small classes. The large classes received social studies, science, art and music telecast lessons. (An additional 570 third graders received the art and music telecasts, as they were taught simultaneously to grades three and four.)

Each school had a secretary and four aides (non-certified personnel) who marked attendance, collected and distributed materials, answered questions of individual students, supervised the operation of visual aid machines, recorded grades and information on cumulative records, helped carry on discussion sessions, and helped with many non-teaching duties.

Since the broadcasting is by open circuit, all 76 elementary schools in the city had access to the telecast lessons. Courses taught by television were: art, music, safety, conversational French, conversational Spanish, and arithmetic for grade 6, social studies for grade 4, science for grades five and six, and children's literature.

Findings: Pupils improved in the skills taught in small classroom groups. Many pupils showed accelerated progress. Most all showed normal growth. The basic skills teachers were enthusiastic over the small classroom group opportunities for teaching and learning.

Pupils learn more from telecasts received in a normal classroom setting than in the large cafetorium type of grouping. Tests and teacher judgment substantiated this finding.

Comments and Observations: The resources room appears to be a difficult area for most teachers. There is such a broad opportunity in this class for teaching that a conscientious teacher really gives more of herself than many teachers are physically able to give. Most teachers today are trained for the self-contained classroom organization and have trouble psychologically disassociating themselves from the children for the time spent with other teachers. For instance, the classroom teacher still feels a personal responsibility for "her" children when they are in special area classes. Her efforts to "hold on" frustrate the child in his other associations with the rest of the staff.

The teacher's guides prepared by the telecast teacher were of great help. These lesson sheets included vocabulary, suggested materials, and suggestions for the pre-and post-lessons.

Film clips, slides, and resource persons used on telecasts were well received since it is impossible to service so many schools at the time these are needed. Pupils had an opportunity to meet and talk with valuable resource people.

The public libraries, State Department of Wildlife, Game and Fish, and Resources Planning Board reported an increased demand for their materials. Banks and public utility companies furnished free materials, such as state maps and brochures.

Cafeterias are not designed for use as classrooms and are far from ideal for large television classes.

Scheduling of elementary programs did not always conform to school schedule.

Some students cannot adapt themselves to large class situations.

Gearing television lessons to meet individual needs of children in large classes still constitutes a big problem.

Creative arts room presents most problems since the teacher should be an art and music teacher. Many parents felt that these classes were too large for individual pupils to get the attention they needed.

II. Secondary School Project

Description: The television project in the secondary schools of Oklahoma City for the school year 1958-59 had three phases: (1) Direct teaching by television to normal size classes; (2) Enrichment teaching by television; and (3) Direct teaching by television to large classes.

Courses taught to normal size classes were:

Algebra, First Course	Grades 8-9
Algebra, Second Course	Grades 11-12
Biology	Grades 9-10
Chemistry (Baxter Film)	Grades 11-12
Mathematical Analysis	Grades 11-12
Physics (White Film)	Grades 11-12

Utilization of these programs the second year improved greatly. Classroom teachers learned better how to be part of a team with the studio teacher, hence felt much less threatened. Also, the studio teachers consistently improved their presentations.

The use of the John Baxter chemistry film for the first time provided many of the same problems experienced when using the Harvey White film in physics. The approach by Dr. Baxter to teaching chemistry was quite new to most of the classroom teachers, hence there was some confusion. Dr. Baxter came to Oklahoma City for a two-day meeting on January 9 and 10, 1959. The chemistry teachers spent these two days working and learning, with Dr. Baxter as consultant. These meetings were most helpful to the teachers. Several Saturday meetings were scheduled after that so that the chemistry teachers could plan laboratory exercises that correlated better with the film. Two of the teachers spent a workshop session with Dr. Baxter during the summer of 1959 doing further work on this project.

Biology was presented for the first time as an elective science for accelerated ninth graders and was highly successful. The studio teacher, planning with the fifteen classroom teachers, developed all of the units, designating specific responsibilities for the television instruction three days of each week. The classroom teachers were most pleased with this arrangement.

Mathematical Analysis, a freshman college course for selected seniors, was another highly successful venture. These students had no classroom teachers in the local building. The pupils understood that they were the class of the studio teacher. He visited them on Fridays, which were "dark-screen" days, sent them their tests, graded their papers, and made out their grades. He was invited by the students to their local PTA groups, to special parent meetings, and to local mathematics clubs. He has also arranged with members of the class for a follow-up activity next year.

Oklahoma History was presented twice a week as an enrichment to the regular ninth grade social studies. It has gradually gained in utilization as television sets have increased in number and as teachers better understand its unique contribution.

Courses taught by television to large classes were: American History and 7th grade science.

This was the first year for Oklahoma City to experiment with the large classes at the secondary level. There were no serious problems, but during the first five or six weeks there was apparent tension in each of the classrooms.

Gradually teachers relaxed, students learned how to operate in the new situation, and minor adjustments were made. For example, in the seventh grade science classes, thirty boys who were retarded readers were taken out of the large class situation. They continued using the television instruction, but they had a special instructor for their follow-up.

The major weaknesses in the large classes were in the follow-up activities. There was too much emphasis on note-taking and testing, particularly in the seventh grade science classes. This was partly the result of a change in the studio teacher during the first month of school, hence there had not been adequate planning with the classroom teachers.

The five teachers in American History had planned well as a team, but the classroom teachers never felt secure in allowing much discussion in such large groups.

Findings: In Chemistry, there was a statistically significant difference in achievement favoring the control group. In Biology, published tests were judged to be unsuitable for the television course content, hence no comparison was made in this subject matter area. In American History, six comparisons were made at the two high schools where this subject was taught over television. All six comparisons favored the television students, and one was statistically significant. In 7th grade science, no valid comparison was possible because of a statistically significant difference between the television classes and the control classes on the pre-tests.

OKLAHOMA STATE

Description: No basic changes were made in the plan of operation of the Oklahoma State project during 1958-59. High schools desiring to offer physics, chemistry, and/or Algebra II without a local teacher were invited to enroll in these courses by educational television. Study guides were provided free of charge to all schools and textbooks were furnished where necessary. In some schools no local resource people were available. Others had some local help. Two men from the State Department of Education visited these schools systematically, working with the telepupils in the above courses where needed. Periodic tests made by the studio teachers were sent to each school and after being administered were returned to the studio teachers for grading. At the end of each nine-weeks period, score distributions in each subject were sent to the respective schools with their students' scores being identified. That is, each school could see its own pupils' scores in relationship to the total state group but could not compare its scores with any other particular school.

The following table indicates both the original and the final enrollments in each of the three subjects comprising the state project:

	BEGINNING		CLOSING	
Subject	Schools	Enrollment	Schools	Enrollment
Algebra II	23	140	21	132
Physics	26	136	23	125
Chemistry	16	56	13	48
Total		332		305

Comments and Observations: In general, schools that had previously used our program did a better job of selecting pupils for participation than had been done in previous years. We have difficulty in getting students, particularly the new ones, to take television courses as an integral part of their school program. Many of them, due to its newness, want to take it as an "extra" subject. We have tried to discourage this practice, but it still persists. Some other problems encountered are caused by inadequate local supervision and counseling of pupils taking these courses. Due to this inadequacy, some of them neglect to study their textbooks and to do their daily assignments. Consequently, they get behind, discouraged, and some eventually drop out. However, we have had many rewarding experiences in working with the boys and girls who took teleclasses without a local teacher.

One of the students plans to be a science teacher, another has enrolled as a pre-medic, and a third has a scholarship at the University of Oklahoma and expects eventually to become a nuclear physicist. The boy who plans to be a nuclear physicist has taken Algebra II, trigonometry, and solid geometry, chemistry, physics, and mathematical analysis by television. The pre-medic student has had Algebra II, physics, and chemistry by television.

The lay public's reaction to educational television has been exceptionally good and is gradually pushing its utilization, particularly in the larger schools. A talk was made before an AAUW organization in a relatively large community which resulted in local utilization of educational television. Midwest City has purchased 37 television sets for use in the school year 1959-60. The stimulus for this came from a talk before one of their PTA groups last spring. Prior to that, no interest had been manifested by the school officials. This school also had representatives at two of our summer workshops. In several communities, PTA groups have purchased television sets for classroom use.

No negative reaction on the part of the lay public has been registered in any of the communities which have been visited. Where newspapers have been contacted, their attitude and cooperation have been positive and enthusiastic.

There are many concomitant values coming out of the state project. Many schools are using several elementary school programs as enrichment to their local offerings and in some instances are using the art and music programs in lieu of special teachers. Several high schools are using our telecasts as basic instruction even though a local teacher is available. They feel that it is an opportunity to upgrade their local teachers and to enrich the educational experiences of their boys and girls.

PHILADELPHIA

Description: Approximately 5,000 students in three elementary schools, eight junior high schools, and three senior high schools participated in the Philadelphia project in 1958-59. Subjects taught by television were fifth grade science, sixth grade language arts, eighth grade science, 7B and 8A mathematics, tenth grade mathematics, and tenth grade biology.

At one elementary school, classes numbered 150 with three teachers in each subject, and each class met in an auditorium built for 500. However, after a few months the principal stated that two teachers would have been sufficient.

At another elementary school, the classes numbered 150; they met in three classrooms made into one, with three classroom teachers. This school was organized into morning and afternoon sessions of two and one-half hours each. One hour of one session was devoted to TV receiving and follow-up. The reamining one and one-half hours were divided into two 45-minute periods for work in resource rooms. One was devoted to physical education, safety and health; the other to music, art, language arts and club activities. The three classroom teachers assigned to the TV receiving classes taught in the two resource rooms.

While the sixth grade classes were following the above schedule, for two and one-half hours in the morning, the fifth grade classes were in traditional classrooms studying other "fundamentals." During the afternoon the above time schedule was reversed.

The teacher time released by the large TV classes and resource room session in one grade was used to establish extra "fundamentals" classes in the other grade. Selected bright pupils were placed in one of these extra classes; very slow pupils were placed in another. This procedure lowered the pupil-teacher ratio in all "fundamentals" classes.

At the third elementary school, classes numbered 200, with two teachers, in an auditorium of 350 seats. Last year, this school followed the same organization as at the second school. However, the necessity of moving the lunch hour one-half hour earlier for the fifth and sixth grades, in order to provide two equal sessions, caused several serious local problems. Therefore, rather than jeopardize the large class experiment, it was decided to forego the reorganization plan.

On the fifth day, pupils met in standard sized classes. Occasionally there was discussion and testing of TV courses, but most of the time was spent on other curricular subjects.

Teachers were unanimous in preferring the four-day organization of 1958-59, which is being continued in 1959-60.

In the junior high schools, classes ranged from 120 to 260 in mathematics, and 150 to 400 in general science. There were two teachers assigned to most classes. Three were assigned to a few larger science classes.

Four of the junior high schools scheduled the groups in large classrooms. Four used auditoriums built to hold about 900.

Classes were scheduled for three periods per week of 45 minutes each. Telecasts were 25 minutes in length. About five minutes preceded the telecast and about eight to ten minutes followed.

Because of the short periods, which curtailed follow-up activities, TV classes were reduced from four days per week in 1957-58 to three days per week in 1958-59. The other two periods were spent in traditional type classes with one of the two or three teachers who served in the large classes.

The single periods were scheduled any day of the week, so that each pupil had five periods per week of the subject, although not necessarily one period each day.

Teachers unanimously preferred the three-two arrangement over the four-one plan of last year because they believed that with such a short follow-up period, after the telecasts, the extra day is necessary for discussions, answering questions, testing, drill and laboratory experience.

Experimentation in the teaching by TV of eighth grade mathematics was undertaken in place of ninth grade social studies because it seemed wise to learn everything possible about the use of TV in the teaching of a subject in which there has been comparatively little experimentation, and in which the need for expert teachers is rapidly increasing.

In the senior high schools, classes ranged from 130 to 200, with two teachers assigned to each class. The organization was the same as for the junior high schools. The teachers in the senior high schools agreed with those of junior high schools in preferring the three-two plan of this year to the four-one plan of last year, for the same reasons.

General mathematics at the eighth grade level and consumer mathematics at the tenth grade level, were introduced into the experiment during the past year and are being continued in 1959-60.

As in the first year, the preparation of teacher guides and pupil work sheets, content and continuity of TV lessons, details of the teamwork approach to teaching including techniques to be used in the classrooms, were planned at a five-week workshop, from June 27 to July 31, 1958. TV teachers, classroom teachers, curriculum specialists, radio-TV assistants, principals, and other administrators cooperated. During this workshop, more time was directed to lesson planning, pupil materials, and classroom techniques than to TV production, except in the case of junior and senior high school mathematics, where the two new TV teachers were trained. Particular attention was given to the development of pupil guide sheets to be used with the telecasts. These included such items as vocabulary to be learned, key questions to be answered, problems to be solved, homework assignments and projects. Projects were suggested in three categories -- for minimum, average, and advanced credit -- in order to challenge pupils of different abilities.

During the year, meetings of TV teachers, classroom teachers and principals were held on Saturday mornings -- with occasional visits from curriculum specialists -- to exchange information, evaluate procedures and plan those for future use, discuss the pace of the TV lessons, formulate tests and revise lessons.

The telecasts were prepared by the TV teachers with assistance from the Radio-TV staff and the WHYY-TV staff. The series which were presented for the second year -- social studies, science, and biology -- showed marked improvement in presentation, pace, use of resources, clarity, simplicity, focus, logical sequence. In fact, Biology I earned a coveted First Award at the Ohio State Institute for Radio and TV, judged with in-school programs from other cities throughout the country.

The use of resources was increased and refined as TV teachers became more skilled in presenting guests and their materials with maximum effectiveness. Nutritional differences demonstrated on laboratory mice was made possible by Smith Kline and French; Dr. Wilton Krogman, nationally known sociological anthropoligist of the University of Pennsylvania, explained bone growth and development in the history of man; man's problem in entering and returning from space was simply explained by the brilliant Dr. I.M. Levitt of Franklin Institute. Experts from the U.S. Bureau of Internal Revenue of Washington, D.C., traveled to Philadelphia with excellent material to explain the many facets of mathematics involved in tax computations. Rotary International sent outstanding leaders of many fields to share knowledge; the actual wampum belt presented to William Penn by the Indians was insured for $50,000 when it was moved from the

Pennsylvania Historical Society to the TV studio for an exciting lesson. These represent only a few examples of the educational experiences made available to students by TV.

Emphasis was placed on the development of TV teaching to stimulate interaction by and among pupils and teachers. Questions were raised, followed by pauses, to permit responses; attention was given to thought-provoking, exciting beginnings of TV lessons to arouse attention and interest; lessons were closed with "open-end" devices to lead into follow-up discussions rather than with distracting announcements of future lessons. Every effort was made to establish a rapport with the pupils so that the TV teacher "discussed with" an audience which responded as the lesson proceeded, rather than "talked at" an audience which listened passively.

TV teachers visited each school at least twice a term to meet the classes personally.

Findings: Standardized achievement tests in each subject taught over television were given to 5,262 matched pairs of students. (One member of each pair received his instruction in a TV class, the other in a conventional class.) In 7B-8A mathematics, three separate tests were given, and in tenth grade mathematics two were given. Over all there were ten different comparisons between the TV classes and the conventional classes. Out of the ten comparisons, eight favored the TV classes and two favored the conventional classes. In four cases -- fifth grade social studies, junior high science, concepts and skills in 7B-8A mathematics, and tenth grade biology -- there was a statistically significant difference in favor of the TV classes. The two cases in which the comparison favored the conventional classes were sixth grade language arts and arithmetic reasoning in 7B-8A mathematics. In both cases the difference in achievement was negligible.

Comments and Observations: Teachers were almost unanimous in the opinion that the bright children were stimulated by the TV lessons to do more and better work. There was also a high degree of agreement that the average pupils achieved more because the TV lessons are verbal and visual.

There was some disagreement about the slower pupils. A majority of teachers said that slower pupils gain more in the TV lessons because they are visual, and do not require the degree of writing and reading skills of the traditional classroom.

In general, teachers' opinions were favorable. Several quotes follow:

> "I believe that more work was accomplished because there was a set time for the lessons and nothing was allowed to interfere with them."

> "The children use the library much more as the result of TV lessons." Listening habits and note-taking were better in the experiment this year than last."

> "I have learned more content and techniques from the TV lessons than I ever have gotten from courses and courses of study."

> "The lesson on the Civil War dramatized the tragedy in a way never achieved in the classroom. The children will never forget it."

Principals reported:

> "More independent work was done by pupils both in school and at home."

> "The children in TV language arts improved by two and three points in city tests in reading and spelling. Normal improvement is one point. I think this is due to the emphasis placed on the study skills."

Reactions of parents, which were largely of a "wait and see" nature last year, became one of acceptance. The following is typical:

> "I was troubled when this experiment began. Now I feel that my child is fortunate to be a part of this program."

Pupils' reactions were mixed:

> "It's easier than regular classroom work."
> "It's boring, but you do learn alot."
> "Writing in the auditorium is hard."

> "Let's get to the point. What I've been edging up to is, without your help, none of the A students would have gotten an A in English. What you have taught us will stay in our minds for the rest of our life. I'm sure plain teaching is your hobby, there's no fancy stuff about it."

So far, it seems evident that teaching by TV in large classes has been successful. There has been marked improvement of teaching techniques in the large classes as a result of the experience gained during the first year.

Teachers, parents, pupils and principals accept the experiment in their schools as a matter of fact. Highly competent teaching teams have emerged. Fears and tensions which existed to some extent during the first year have disappeared. An attitude of confidence and objectivity prevails.

SOUTHWESTERN INDIANA

Description: The educational television experiment of the SWIETV Council was conducted during the 1958-59 school season in the ten counties of Southwestern Indiana by the school corporations of Boonville, Cannelton, Evansville, Huntingburg, Jasper, Mt. Vernon, and South Posey, Newburgh-Ohio Township, New Harmony-Harmony Township, North Posey, Oakland City-Columbia Township, Petersburg, Princeton, Rockport Ohio Township, Tell City, Vincennes, and Washington. The superintendents of these school corporations formed a council with an approved set of by-laws. These by-laws provided for an executive committee to administer the program of educational television on an experimental basis and the six superintendents of the committee had regular monthly meetings for the transaction of the business associated with the project.

Financial support for the $150,000 project was provided by a grant of $75,000 from the Ford Foundation and an equal amount from the sixteen school corporations of the council as divided according to the enrollment of the schools participating. The Foundation's share was received in July and deposited in two banks in Evansville and the National Bank at Boonville. The payment for the attendance of the teachers for a workshop in Evansville of four weeks was paid by the funds of the sixteen schools by additions to regular contracts with other workshop costs being paid for from the Foundation fund. The remaining financial responsibility shares were sent into a Center by means of nine equal payments beginning in October. This Center was established in Evansville. The member schools of the Council provided necessary furniture and the needed equipment was obtained on a rental basis for a two year period. Four rooms on the second floor of this formerly used elementary school building provide the necessary space for this now so-called Center for Educational Television. Custodial services are being provided from the combined funds.

A plan of instruction was formulated at a workshop of teachers and principals held at North High in Evansville from June 16 to July 11, 1958, with help from consultants sent in by the Ford Foundation for this educational television experiment. The general plan was for a daily telecast of 25 minutes by specially selected teachers and a follow-up period of 15 to 30 minutes conducted by a teacher in the school where the telecast was received. This follow-up time might come before the telecast, might be split, or might follow immediately after the telecast. Each school determined its own time for the follow-up or class participation time with the receiving teacher in charge. This plan of instruction called for outline guides as well as test material. Everything necessary for the program was discussed and definite plans and guides materialized. Seminars in November and April added greatly to the coordination of this co-operative experiment.

WTVW, Channel 7, a VHF television station has been the means by which this open TV experiment was telecast and the same arrangements are possible in the future because of contract commitments. This commercial station provided two studio sets, two cameras and operators, a director and audio man, and has been very cooperative in the presentations. The "know how" has been very helpful. Time films were cut for the five minute intermissions and many favorable comments were received relative to the music that our SWIETV production director provided. The equipment for these productions was designed and made by the cabinet makers of the Evansville Maintenance Department. WTVW, at $100 for each day's rental, provided rehearsal time and studio teacher try-out time with helpful cooperation.

One hundred eighty-five days of telecasting were used during the year in sending out the following program to 11,803 students and many other interested people:

Grade 9	1st semester - Literature 2nd semester - Grammar
Grades 5-6	Science, Health, Safety
Grade 11	U.S. History
Grades 7-8	Science, Health, Safety
Grade 12	1st semester - Government 2nd semester - Socio-Economics
Grade 10	Plane Geometry

Various type classrooms were utilized by the principals in their plans for this experiment in teaching large classes, and new rooms are contemplated for the future. Auditoriums, (some have arms on every other seat) study halls with permanent seating, library rooms, choral and band rooms, upper floors of the gymnasiums, and cafeteria rooms were used with various arrangements of the television sets. Some newer schools have collapsible wall partitions and are very happy with this type room facility. Further experimentation is needed in this area, particularly that of seating. Some principals are thinking that tablet arm type chairs are best because of their mobility for any type of follow-up desired. Some superintendents are contemplating advice from acoustical experts as well as from architects who are thinking of divided auditoriums and soundproof walls.

It was generally thought in the beginning that an associate teacher would be the chief aide for the master teacher and that a special secretary for all the television classes would provide the teaching needs in the receiving schools. The concensus after the first year is that the master teacher can do the actual teaching without the professional associate but that an aide would be of more assistance. This aide could be on a half-salary basis doing scoring and recording of tests, mimeograph work, and other routine tasks desired by the teacher. Evansville is now adjusted to kindergarten assistants who are doing excellent work at one half the salary of a regular professional teacher. New techniques in teaching have been tried and adopted as its success is determined by the teachers involved.

Findings: More than thirty different comparisons, involving more than 14,000 students in the ten counties of Southwestern Indiana, were made in six different areas of instruction. The students were divided into five groups, according to the results of a mental ability test. Group I consisted of those students with an I. Q. of 121 and up; Group II, those with I. Q. of 111 to 120; Group III, 101 to 110; Group IV, 91 to 100; and Group V, those with an I. Q. of 90 or lower.

In Intermediate Science (5th and 6 th grades), three comparisons favored the students in the television classes and one favored the students in the conventional classes. (In the fifth case the comparison favored the television classes, but this was not considered valid because of a wide difference in pre-test scores.)

In junior high science (7th and 8th grades), all five comparisons favored the television classes.

In 9th grade English, three comparisons favored the television classes, one favored the conventional classes and in the fifth case there was no difference in achievement.

In 10th and 11th grade Geometry, all four comparisons favored the students in the television classes. (There were no students in the low-ability group in this subject since it is an elective course among the schools in Southwestern Indiana.)

In 11th and 12th grade U.S. History, three comparisons favored the television classes, one favored the conventional classes, and in the fifth case there was no difference in achievement.

In 11th and 12th grade Government, two comparisons favored the television classes, two favored the conventional classes, and in the fifth case there was no difference in achievement.

To sum up, twenty comparisons favored the television classes, five favored the conventional classes, and three showed no difference.

Comments and Observations: The following statements are being made after a year of study derived by observation, consultation, programs, public talks, letters, area and group reports, feed back sheets, visitors' analysis, administrative reports, and from general public opinion.

1. All of the teachers should participate in the formation of the year's course of study and a close relationship must exist between the studio and the classroom. The interchange of teaching might help this need.
2. The classroom teacher should have adequate time for preparation and help in the form of an aide for the paper work involved. No extra professional help seems desirable although a division of teaching by units might be another approach for better follow-up teaching.
3. The good receiving teacher must have the ability to organize and successfully supervise groups as well as to motivate them. These factors should be carefully considered in the selection of such a teacher.

4. The studio teacher should be on a special salary schedule because of the various pressures and the need for having the best available master teacher on the job. Their presentations must be correct in concept terminology and information as well as getting a technically correct presentation.
5. A definite upgrading of teacher classroom work was noticeable as the methods and techniques involved in the television lessons transferred to the traditional type classes. Criticisms directed at the studio teachers served as checking devices for those teachers who found it desirable to look again at their own methods of teaching.
6. More information was covered than in the conventional classes partly due to organization and lack of outside interference during the class periods.
7. Many educational experiences were available because of television that could not have been obtained in the other type class. The installation of a mayor and the showing of museum treasures are examples of this.
8. School and city librarians reported that the interest created in television classes created an extra demand for library facilities. This was especially true for the higher ability students.

WICHITA

Description: Four elementary schools participated as experimental schools for the first year of the Wichita project. These same schools continued with the project for the second year.

In an attempt to learn about teaching large groups and teaching by television in the secondary schools, a limited amount of such teaching was done at an intermediate school and a high school.

About 1500 elementary and secondary students were involved in the project during 1958-59.

The general plan used by all four elementary schools was a modified Stoddard plan. For each student the plan included work in a resource room for 80 minutes, a creative arts room and a health and physical education room for 40 minutes each and a basic classroom for a half day.

The basic classroom teachers had two groups of students -- one in the morning and the other in the afternoon. These groups were smaller than the normal-sized classes. The teacher concentrated on the essential phases of learning in such subject areas as reading, arithmetic, language arts, etc.

The large group in the resource room viewed television lessons and films, did committee work and prepared weekly newspapers, had library periods and devoted time to at least one academic subject. The first year of the experiment, science was taught in the resource room; the second year, social studies.

The creative arts teachers taught art, music appreciation, creative dramatics and literature and, in some cases, other phases of the music program. The health, physical education and safety teacher was responsible for these phases of the students' education.

During the first year of the project, commercial television facilities were used to broadcast science and enrichment lessons to the experimental schools. In August, 1958, the superintendent and the project director were notified that broadcast time by the commercial station would not be available since the network to which the station is affiliated desired more daytime programming. The idea of using low-powered, low-cost television equipment for closed-circuit telecasting within each of the four schools was conceived. In order to provide a studio atmosphere and to better manipulate the equipment (and eventually save on its maintenance), it was suggested that an old house-trailer be remodeled for a miniature studio and be pulled from school to school by a pickup truck. The truck would be driven by the studio teachers, who also would teach the telelessons and operate the studio equipment. A budget for such equipment was approved by the Board of Education and on September 18, 1958, the first lesson was presented.

Due to closed-circuit limitations, it was necessary to present each 30 minute television lesson eight times for the fifth and sixth year students in the four experimental schools, so that no student received more than 60 minutes of televised instruction a week.

Since the mobile studio equipment was not being used on Wednesdays, it was decided to experiment at the secondary levle. Beginning with the second semester one lesson a week in general science was taught to 130 seventh and eighth grade students at an intermediate school and one a week in American History to 180 students at a high school.

In all schools, a brief period of time before the telelesson was used by the resource room teacher for preparing the students for the televised lesson and fifteen minutes or more were used after the television lesson for follow-up activities.

Findings: Since televised instruction amounted to only about 60 minutes per week per student in the Wichita experiment, valid comparisons in performance between television classes and control classes were not possible. However, in the tests that were given there was no significant difference in the performance of the two groups.

The principals, teachers, and parents of the four experimental schools agreed that the second year for the girls and boys in the experiment was a valuable educational experience and that it would be worthwhile educationally and experimentally to continue the project for a third year.

Comments and Observations: According to the basic classroom teachers, there were many assets of the academic classroom as set up in the experiment. A few of these according to frequency of times mentioned were:

> The basic classroom teacher can spend her time planning for her classes (and make better preparations) instead of worrying about art, music, etc.
>
> More time can be spent with individuals.
>
> Opportunity to have concentrated study on basic subjects.

Although the teachers listed many problems of the basic classroom, only a few were noted by more than one teacher. These were:

> The time element -- not enough time to cover course of study.
>
> It is more difficult to follow through on homework with the morning group; to arrange to make up work.
>
> Two classes sharing a room designed for one -- not enough space for multiple science experiments, displays, etc.

In the spring of the second year of the experiment a meeting was held for basic classroom teachers (grades 3-6) of the four experimental schools. The purpose of the meeting was to discuss activities, techniques and unsolved problems of the basic classroom. A general meeting was held for all teachers to discuss the advantages and disadvantages of the basic classroom. Later in the same meeting the teachers met by grade levels to discuss techniques, methods and materials for their particular grade.

The teachers of the large classrooms in the four experimental schools (65-120 students) were unanimous in their opinion that the two years of the experiment have been a good experience for the boys and girls.

The four creative arts teachers in the experimental schools also believed that the two years of the experiment had been a good experience for the students.

The librarians of the schools, played an important part in the experiment. All four librarians at the elementary level believed that the students in the experiment used library facilities more than the usual students in the self-contained classroom schools.

Six hundred thirty-eight parents answered a questionnaire which they received in regard to the experimental project. Of the 638 respondents, 212 parents had children who had participated in the experiment only one year and 326 had participated for two years. Three hundred ninety-eight parents indicated they would like to have their children continue in the reorganized program for another year. Sixty-five would rather that their children did not continue in such a program for another year, and 5 said they did not know or "whatever is best."